Boards of directors, audit committees and auditor provided non-audit services

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Declaration

To the best of knowledge, this thesis contains no copy or paraphrase of material previously published or written, except where due reference is made

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Abstract

Auditor independence has been a key focus for the auditing profession and regulators. Recently, considerable attention has been paid to auditor provided non-audit services (APNAS) and the governance from audit committees. The purpose of this study is to examine the association, if any, between the board of directors, audit committee and the purchase of APNAS.

The monitoring hypothesis predicts that the stronger the board (and audit committee), the less APNAS the firm will buy. It was also expected that the relationship between APNAS and the board and audit committee variables will significantly alter after 2001 due to the intense scrutiny following the spectacular corporate collapses of the year. Finally, it seeks to test the substitutability of monitoring from boards and audit committee and that from the external audit by examining companies with different investment-production attributes.

The results for the 4-year pooled sample 1999-2002 shows relationships between APNAS (relative to the total fee paid to auditors) and board size, multiple board directorships board financial literacy and audit committee size consistent with the monitoring hypothesis. When the same regression was estimated for just 2002, it produced a much lower adjusted R^2 compared to those of the previous three years. The results also find that only board size and multiple board directorships remain consistent with the monitoring hypothesis. However this has to be interpreted in light of the fact that the regression results for the 3 previous years individually were weaker as well. This could be due to their smaller sample size which reduced the power of

the test. Finally the tests found little evidence that monitoring from effective boards and audit committees were being substituted by the quality of the external audit.

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CHAPTER 1. INTRODUCTION AND PURPOSE

1.1 Introduction

Since the high profile corporate collapses such as Enron in the USA and HIH Insurance in Australia, the issue of auditor independence has been a key focus for the auditing profession, regulators and users in the market for financial information. In particular considerable attention has been paid to the joint provision of audit and auditor provided non-audit services by accounting firms (see for example Levitt 2000a,b,c; Thornson 2001; Byrnes et al. 2002; Nussbaum 2002; Deloitte Touche Tohmatsu 2002). A non-audit service (NAS) is simply defined as a service provided by an auditor that is not part of the external auditing process. Auditor provided non-audit services (APNAS) is where an incumbent audit firm provides NAS to the same organization it audits. When this happens, it has been argued that there is an increase in fee dependency and conflicts of interest, which results in a threat to auditor independence, lower quality audit and investor confidence. On the other hand, audit firms claim that they always maintain high levels of independence and that the provision of NAS can be beneficial to the audit.

Public debate over auditor independence in general and APNAS in particular has been heated in recent years in Australia and in much of the developed world. This heightened debate is likely to increase directorial awareness of potential threats to auditor independence. The Ramsay Report's (2001) recommendation for a 'declaration of independence' by the auditor is being adopted as best practice by first tier auditors and this is likely to further heighten awareness. The corporate collapses may also have the effect of increasing scepticism among regulators and stakeholders

regarding the quality of the external audit performed (Hepworth 2001, Davis 2002), thereby altering the sensitivity of boards to potential threats to auditor independence and quality.

Prior evidence regarding the impact of APNAS on auditor independence has had mixed results. One line of research seeks to find a relationship between APNAS purchases and the investor's perception[1] while another line looks to associations between APNAS and indications of poor audit quality such as evidence of earnings management[2], auditor changes that appear unjustifiable[3], probability of issuing a favourable audit report when not deserved[4] and restatements of a firm's previously issued financial statement[5].

A different line of research identifies which firms are likely to desire higher quality audit and tests whether there is a relationship between those firms and APNAS purchase, the argument being that higher audit quality is associated with lower APNAS. To identify these firms, agency costs[6] and corporate governance[7] variables have been used in several previous studies. A possible weakness of these studies is

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[1] Frankel et al. (2002) and Brown et al. (2006) found that investors 'punish' firms with high APNAS however, Ashbaugh et al. (2003) did not. In addition, Francis and Ke (2004), Ghosh et al. (2004), Krishnan et al. (2005) and Gul et. al. (2006) find that APNAS is negatively related to the firms ERC,
[2] Frankel et al. (2002) and Ferguson et al (2004) found support for APNAS leading to lower auditor independence. However, Ashbaugh et al. (2003), Chung and Kallapur (2003), Larcker and Richardson (2004), Reynolds et al. (2004) and Antle et al. (2004) find that the results in Frankel et al. (2002) are sensitive to sample selection and model specification.
[3] DeBerg et al. (1991) and Barkess and Simnett (1994) found no association between APNAS and auditor change while Li et al. (2003) found no relationship between APNAS and auditor tenure.
[4] Wines (1994) and Sharma and Sidhu (2001) find that high APNAS led to a lower likelihood of being issued unfavourable audit reports. However, Barkess and Simnett (1994); Craswell (1999); DeFond et al. (2002) did not. Li et al. (2003) found evidence in only one of three years investigated.
[5]Ferguson et al (2004) found that firms with high APNAS were more likely to restate prior financial statments, while Kinney et al. (2004) found limited evidence of it. However, Raghunandan et al. (2003) found no relationship between APNAS and likelihood of restatement of financial statements.
[6] Parkash and Venable (1993), Firth (1997) and Houghton and Ikin (2001) found support for a variety of agency cost variables as determinants of APNAS.
[7] Abbott et al. (2002) found that firms with an effective audit committee are related to lower APNAS.

that it ignores firm specific attributes that may affect the quality of audit or encourage increased threats to auditor independence.

This study extends the second line of research by examining how firm specific attributes are related to the perceived impact of APNAS on the monitoring role of the external audit. In particular the time period under investigation is 1999-2002 where audit firms faced an increasing level of criticism on the relatively high APNAS fees many companies are paying them and particularly in 2001 which witnessed the spectacular collapses of HIH in Australia and Enron in the US which resulted in several regulatory changes in both jurisdictions.

The purpose of this study is to further examine the association, if any, between the board of directors (and related audit committee) and the purchase of APNAS. The board and the audit committee (as a board sub-committee) are mechanisms that warrant investigation given that members of these governance structures may have access to additional (private) information about the quality of audit that is not publicly available nor directly observable. In addition the board and/or audit committee hold significant influence over the selection of the auditor[8] and the purchase of NAS, providing board members with the ability to influence policy changes on this matter. The audit committee, a sub-committee of the board generally delegated with specific financial oversight responsibilities, is examined specifically because it is promoted as a market mechanism to enhance audit quality and particularly auditor independence (eg Ramsay Report 2001). This study contributes to the existing literature by

[8] Jubb and Houghton (1999) found that director characteristics (in particular director-auditor links) were significant in explaining auditor choice.

providing evidence about the board's implicit perception of the impact APNAS has on audit quality.

Finally, the events of 2001 have increased the visibility of potential threats to auditor independence from APNAS. This serves as an ideal opportunity to investigate whether such increased public scrutiny resulted in a change in the relationship between APNAS and board characteristics, which are used as an indication of governance quality.

1.2 Motivation

There is a growing body of work studying the effects of the joint provision of audit and non-audit services. Within this literature, the relationship between the board of directors and the auditee's purchase of APNAS is of interest for the following reasons. First, the board of directors plays a pivotal role in the corporate governance structure of the auditee. Part of this role includes responsibility for the representations made in the annual financial report, and oversight of the quality of the external audit carried out on that report. Second, it has significant influence over the choice of auditor and the provider(s) of NAS as well as the amount spent on each of audit and NAS, giving it the ability to manage perceived audit quality through its decision on choice of auditor and the relative level of APNAS. In addition, since audit quality is not generally observable externally, the board may have additional (private) knowledge regarding audit quality that is not generally available. Hence examination of this relationship should provide insights into the board's perception of any impact APNAS is likely to have on audit quality.

One of the studies that investigated this relationship was Abbott et al. (2003) who found that companies with a strong audit committee bought less APNAS than other companies, suggesting that such companies demanded higher audit quality from their auditors. However they only investigated auditor diligence and independence, measured using audit committee meetings and whether the members of the committee are independent directors. They did not control for variation in the full board of directors characteristics nor other audit committee characteristics such as its size, multiple audit committee memberships and financial literacy. The board is an important element to investigate given that it heads the internal control framework of the company, and that it has significant influence over the selection of auditor and purchase of NAS.

This study replicates and extends Abbott et al. (2003) by using more comprehensive board and audit committee variables as well as a using longer time frame and a more stable data set.

On the other hand, Anderson et al. (1993) and Matolcsy et al. (2000) argued a substitution hypothesis in which various corporate governance mechanism are can be substituted for each other. In particular, that monitoring provided by a strong board can be substituted for higher audit quality and they found evidence that certain firms rely relatively more on board monitoring and others rely more on auditor monitoring. This study seeks to provide additional evidence in this area by examining empirically which hypothesis is dominant and whether it is possible to predict for which group of firms each of the two hypotheses will dominate.

Also, another motivation for this study arises from increased contemporary debate regarding audit quality, one of the main points being the provision of APNAS. Debate over APNAS has particularly come to public attention in the U.S. in 2000 as the SEC sought to introduce a revised rule for auditor independence, with APNAS a frequent target in public speeches by the then SEC chairman Arthur Levitt[9]. This was followed by very public corporate collapses in 2001 such as HIH in Australia and Enron in the U.S. (both of which are the largest collapses in the history of their respective jurisdictions). In both cases, auditor independence has been called into question and in particular, large spending on APNAS has drawn criticism of the accounting profession (see for example Thornson 2001; Weber et al. 2002; Byrnes et al. 2002; and Nussbaum 2002). As a result of these collapses, critics of APNAS have renewed calls for restrictions on audit firms providing other services to their clients. This research aims to enrich the debate by providing additional insights into the impact APNAS may have on audit quality.

1.3 Theoretical development

This study examines the relationship between levels of APNAS bought by the firm and its board of directors and audit committee from an agency costs perspective.

The agency problem arises as a result of conflicts of interests between the managers and shareholders. Corporate governance encompasses the set of institutional and market mechanisms that are used to resolve these conflicts (Denis 2001). Among the

[9] see for example a speech at the Natioanl Association of State Boards of Accountancy (Levitt 2000a) and the opening speech for an open meeting of the SEC on Market Structure Initiatives In the Options and Equities Markets, and Rules Governing Auditor Independence (Levitt 2000c).

various types of corporate governance mechanism, internal control mechanisms can be the most effective (Jensen 1993).

Perhaps one of the most important of these mechanisms is the board of directors, which heads and monitors the internal control mechanisms of the firm (Jensen 1993; Fama and Jensen 1983a). A crucial sub-committee of the board is the audit committee, which is typically delegated specific financial oversight responsibility (Menon and Williams 1994b). A primary part of this responsibility is auditor selection and retention with a mind to maintain the quality of the audit.

Some would also say that another corporate governance mechanism is the general purpose financial report issued by companies (Watts 1977). By conveying some of the management's private information about the firm, it seeks to reduce the information asymmetry between the two, lowering the monitoring costs of the shareholders. External auditors are engaged to provide assurance that the financial report is true and fair (Chow 1982). Thus the extent to which the financial report can reduce agency costs is heavily dependent of the quality of the audit, which in turn is dependent on the independence of the auditor (DeAngelo 1981).

Given that one of the roles of the board of directors is to monitor the internal control mechanisms of the firm, the board should monitor the quality of the external audit. One possible threat to the independence of the auditor (and consequently audit quality) is the joint supply of audit and non-audit services to the same client (IFAC Ethics Committee 2001; Ramsay 2001; ICAA and CPAA 2001). As such, the board,

and the audit committee, should monitor the purchase of APNAS within the firm. Indeed one of the requirements of the Sarbanes-Oxley Act (SOX) in 2002 in the United States is for the audit committee to monitor and formally pre-approve any APNAS purchases, and CLERP 9 in Australia now requires that the board of directors make a statement on whether they are satisfied that the provision of NAS by their auditors do not compromise the general standard of audit independence required by the Corporations Act.

Firms with a strong board of directors will seek to minimise agency costs. One way to do this is to maintain a high quality external audit. Given that there is a potential for APNAS to threaten the perceived independence of the auditor, the monitoring hypothesis predicts that firms with strong boards and audit committees will purchase less APNAS compared to other firms.

This study investigates the period 1999-2002. The period begins with increasing regulatory scrutiny and criticism on APNAS in the US as the growing consultation arms of the major international audit firm generate increasing levels of APNAS fees relative to their audit fees. This was then followed by a number of high profile corporate collapses in the US and Australia, particularly that of Enron in the US which eventually lead to the collapse of Andersen, one of the Big 5 audit firms at the time. The scale of the failures brought with it major regulatory changes (such as SOX in the US and CLERP 9 in Australia). Therefore, it is expected that these events will lead to a significant change in the relationship between the boards and audit committee and APNAS.

Finally the substitution hypothesis was put forward as an alternative to the monitoring hypothesis. It has been argued that firms rely on a bundle of corporate governance mechanisms to manage agency cost, and that some of these mechanisms may be substituted for each other (Rediker and Seth 1995). This leads to the substitution hypothesis which predicts an opposite relationship between board and audit committee and APNAS spending.

To determine whether the substitution or monitoring hypothesis is dominant, the firms' production-investment attributes are examined. Firms with higher assets-in-place have a greater need for monitoring from auditors, while firms with higher growth options rely more on the monitoring from directors (Anderson et al. 1993). So it is argued the substitution hypothesis is dominant in firms at the two extreme ends of the production-investment spectrum, while the monitoring hypothesis is expected to be dominant in firms with moderate levels of assets-in-place and growth options.

1.4 Overview of research method

The base model is a multivariate regression where variables that proxy for the quality and independence of the board of directors and audit committee are regressed against the ratio of non-audit fees to total fees paid to the auditor. This is estimated on the 4-year pooled sample for 1999-2002.

To investigate whether the events of 2001 significantly alter the relationship between APNAS and boards and audit committees, the model is estimated for 2002 and compared with those from the 3 previous years.

To test the substitution hypothesis, the sample is then split into three sub-samples with the firms ranked on their ratio of assets-in-place to growth options and separate regressions are estimated on each sub-sample.

1.5 Summary of the findings

The base model regression for the 4-year pooled sample 1999-2002 shows relationships between APNAS/TFEE and board size, multiple board directorships board financial literacy and audit committee size consistent with the monitoring hypothesis in support of H1.1, H1.2, H1.4 and H3.1.

Next, the composite audit committee effectiveness (ACE) variable used in Abbott et al. (2003) was replicated and a series of regressions were estimated to analyse its relationship with APNAS. It was found that in Australia, ACE was unexpectedly positively related to APNAS, suggesting that effective audit committees are associated with higher APNAS spending. This was found to be mainly driven by the frequency of audit committee meetings. However, when board and other audit committee characteristics were controlled for, the significance of ACE as well as audit committee meeting frequency was lost.

The main regression model was then estimated for 2002, which produced a much lower adjusted R^2 (of 14.8%) compared to those of 1999-2001 (pooled sample at 19.3 %; and individually 20%, 20.9%, and 19.4% respectively). The results also find that only board size and multiple board directorships remain consistent with the monitoring hypothesis. This supports H5. However this has to be interpreted in light of the fact that the regression results for the 3 years individually were weaker as well.

In particular, it seems that the 2000 regression has the strongest results, while 2001 the weakest. It is possible that the reduced sample size of the individual years reduced the power of the test producing weaker results.

To try to avoid the possible effects of mulitcollinearity among the test variables, the board variables were estimated without the audit committee variables and vice versa. While the board variables only model produced similar results compared to the full model the audit committee variables only model produced significant negative relationship between APNAS and audit committee size, multiple audit committee membership and the financial literacy of the audit committee, supporting H3.1, H3.2 and H3.4.

This largely mimics the results found in the board variables where size, multiple directorship and financial literacy was also found to be negatively associated. This suggests that while audit committee characteristics are related to APNAS/TFEE, it provided little additional explanation as to variations in APNAS/TFEE over and above that provided by the board variables.

Finally the firm years was separated into 3 sub-samples ranked on their production-investment attributes. The regression estimated however provided little evidence of substitution between monitoring by the board and audit committee with monitoring from the external audit, with the assumption that high APNAS leads to an decrease in audit quality, failing to support H6.1 and H6.2..

However, care should be taken in interpreting the above results given that the various regressions estimated in the study shows some sensitivity of the results to model specification and sample selection.

1.6 Significance of the results

Regulators such as the Australian Treasury (2002), Auditing and Assurance Standards Board (AUASB 2001), professional bodies (ICAA and CPAA 2004) and the Australian Stock Exchange (ASX 2003) have focused recent efforts on improving audit quality, and examined various issues including APNAS as well as the audit committee.

This study contributes to the literature on the use of the audit committee as well as the board of directors as a monitoring tool for corporate governance, and its relationship with APNAS. The results of the study do show that the quality and financial literacy for the board as well as the resources available to the audit committee are inversely related to APNAS purchases. This suggests that the directors view APNAS as a threat to independence either in fact or in perception, and effective boards and audit committees restricts its purchase by their company.

An interesting result of the study is that the percentage of outside directors or audit committee members were not associated with APNAS, suggesting that independent directors by themselves do not significantly add to the governance of the company in respect of APNAS unless they have a financial background or governance expertise (measured by multiple directorships/audit committee memberships).

It also provides some evidence on the substitutability of monitoring from boards and audit committee and that from the external audit. Examining partitions of the sample where one form of monitoring is more valuable then the other, little evidence was found to support the hypothesis that high quality boards and audit committees would allow increased APNAS that may threaten the quality of the audit, or that companies would seek a less effective board/audit committee while maintaining a high quality audit.

1.7 Organisation of thesis

The rest of the thesis is organised as follows. Chapter 2 discusses the agency problem and its relationship with various corporate governance mechanisms focusing on the board of directors, audit committee and the external audit function. How APNAS might affect the quality of the external audit is then examined and the relationship between APNAS, the board of directors and the audit committee is discussed. Chapter 3 develops the testable hypotheses. Chapter 4 describes the sample selection and explains the research methods and describes the variables used in the model. Chapter 5 presents and analyses the empirical results of the tests. Chapter 6 provides a summary of the study and explains its significance and limitations and suggests avenues for further research.

CHAPTER 2. THEORETICAL FRAMEWORK

2.1 Introduction

This chapter outlines the theoretical framework that underpins the present research. In doing so, it describes how conflicts of interests between managers and shareholders can lead to agency costs. Corporate governance mechanisms are the set of institutional and market mechanisms used to resolve this agency problem. Two such mechanisms are the board of directors and the external audit. The ability of the external audit to lower agency costs is dependent on its perceived quality, which is dependent on the perceived independence of the auditor that performs the audit. The perception of auditor independence might be threatened if the audit firm jointly provide NAS and audit services to the same client.

Section 2.2 briefly describes the agency problem and while section 2.3 outlines the major types of corporate governance mechanisms that are used to control this problem. One of the corporate governance mechanisms of interest in this study is the board of directors which examined in greater detail in Section 2.4. Sub-sections 2.4.1 and 2.4.2 describes the quality and independence of the board and how it might affect the ability of the board of directors to effectively act as a corporate governance mechanism. Sub-section 2.4.3 looks into one of the sub-committees of the full board, the audit committee. Section 2.5 examines another corporate governance mechanism, the external audit. Section 2.6 introduces non-audit services and describes how purchasing NAS from the firm's incumbent auditor can affect audit quality. This can be broken down into how it affects auditor competence (which is described in sub-section 2.6.1) and auditor independence (which is described in sub-section 2.6.2).

Section 2.7 explains what impact the board of directors can have on a firm's purchase of APNAS as well as putting forward the monitoring hypothesis. Finally section 2.8 provides a summary and conclusion to this chapter.

2.2 Agency costs

It is widely acknowledged in much of the extent literature that conflicts of interests between the managers and shareholders can arise, leading to agency costs (see Jensen and Meckling 1976, Fama 1980, and Fama and Jensen 1983a,b). However, for many large corporations, diffused shareholders and the 'free rider' problem makes it inefficient for shareholders to act as effective monitors of management. Corporate governance encompasses the set of institutional and market mechanisms that are used to resolve these conflicts (Denis 2001). The theory that underlies modern corporate governance research and explicitly defines these conflicts is agency theory. The agency problem arises from the separation of ownership and control within the contractual view of the firm (see Jensen and Meckling 1976, Fama 1980, and Fama and Jensen 1983a,b). This occurs when an agent (management) has differing objectives to the principals (owners) and therefore has incentives to act against the best interest of the principal. This problem gives rise to agency costs, which are comprised of (1) *monitoring costs* which are the costs of monitoring the agent's behaviour; (2) *bonding costs* which are mechanisms that encourage the agents to act in the interests of the principals; and (3) *residual loss*, which is where even with monitoring and bonding, the agents' and principals' interests do not fully align.[10]

[10] Monitoring costs are borne by the principals in first instance but and transferred to the agent when determining their remuneration. Bonding costs are borne by the agent and are incurred to the extent that the marginal cost of bonding equals the marginal reduction in monitoring costs.

2.3 Corporate governance

As described above, conflicts of interests between the managers and shareholders can arise, leading to agency costs. However, for many large corporations, diffused shareholders and the free rider problem makes it inefficient for shareholders to act as effective monitors of management. To convince shareholders to part with their money and trust management, various mechanisms have evolved to manage and reduce such agency costs to a level that is sustainable in the long run. Such mechanisms are generally referred to as corporate governance mechanisms.

Jensen (1993) outlines four basic categories of individual corporate governance mechanisms. These are:

1. Legal / political / regulatory mechanisms,
2. Product and factor markets,
3. Capital markets, and
4. Internal control mechanisms.

The legal / political / regulatory framework is the basic control mechanism that protects shareholders from managers. However, Jensen (1993, 850) criticises these mechanisms as being "far too blunt an instrument to handle the problems of wasteful managerial behaviour effectively". In addition, while this framework 'protect the public interest', they are not designed to produce optimal performance from the managers.

Jensen (1993) points out that while the product and factor markets are slow to act as a control mechanism, their discipline is inevitable. To survive, the firm must be able to

produce products for which there is a demand with a cost structure (including agency costs) that allows them to sell at a competitive price. Poor performance will ultimately lead to financial distress. Unfortunately, by the time market discipline takes effect, it may be too late to save much of the firm in whatever form it may exist at the time. It can be argued that both Enron and HIH are examples of this.

In terms of capital markets, Jensen (1993) was mainly interested with the takeover market. In addition to the discipline enforced by product market competition, management teams are also under pressure from the competition of other management teams. Firms that are performing poorly are more likely to be targets of takeover bids (Palepu 1985, Morck et al. 1988) and managers of poorly performing targets are more likely to be removed if the bid is successful (Martin and McConnell 1991), ideally to be replaced by a superior management team that will drive a higher level of corporate performance.

However, Shleifer and Vishny (1997) note several reasons why the takeover market might not be an effective corporate governance mechanism. First, takeovers are sufficiently expensive such that only major performance failures are likely to be addressed. Also the existence of a fluid takeover market might increase agency costs for the bidding firm. Since bidders frequently pay a premium for the target firm's shares, the takeover may be a negative NPV purchase motivated by excessive empire building (which is a type of agency cost).

Given that legal/regulatory mechanisms are "too blunt an instrument", product market competition is "too slow" and the takeover market is "not effective", the remaining control mechanisms are those within the firm.

However, Jensen (1993, 850-851) notes that while internal control mechanisms have "generally failed to cause managers to maximise efficiency and value ... there are firms that have proved to be flexible in their responses to changing market conditions in an evolutionary way". This suggests that the quality of corporate governance for internal control mechanisms vary from firm to firm.

Denis (2001) lists the primary internal mechanisms as the board of directors, executive compensation and the firms' ownership and debt structures. This study then focuses on the board of directors and the audit committee, as internal control mechanisms[11].

2.4 The board of directors as a corporate governance mechanism

For the reasons given above, the internal control mechanisms of the firm are the most flexible and cost effective corporate governance mechanisms to achieve equilibrium with minimal agency costs. The board of directors heads the internal control mechanisms with the power to hire, fire and compensate top-level managers and to ratify and monitor important decisions (Jensen 1993; Fama and Jensen 1983a). To the extent that they are effective monitors of management, boards can reduce agency costs by safeguarding the interests of the shareholders.

[11] see Core et al. (2002) and Shleifer and Vishny (1997) for further information regarding other internal corporate governance mechanisms.

Even though corporations are required by law to have a board of directors (which may consist of as few as a single director), there is relatively little regulation in Australia and much of the modern world regarding the composition of the board, members' qualifications, and their relationships with other parties such as the firm's management, creditors, suppliers, or auditor. As such, firms with different agency cost structures can seek out appropriate directors who will provide the best equilibrium position with minimum agency costs. The board in turn fulfils its monitoring role by managing the various other internal control mechanisms.

Although Hermalin and Weisbach (2002) pointed out that there is little formal economic theory on boards, there has been substantial empirical work, the majority of which focuses on the effectiveness and the relative independence of the board.

2.4.1 Quality of the board

The quality of the board refers to its ability to manage the other internal control mechanisms available to it, which it uses to monitor management and at times to set general policies of the firm. One can argue that high quality board will seek to tailor the control mechanisms of the firm to achieve an optimal equilibrium with the firm's existing agency cost structure and the cost of maintaining the control mechanisms.

2.4.2 Independence of the board

Just as important as a high quality board is one that is primarily independent of management. One of the main functions of the board is to monitor management on behalf of the shareholders. This includes ensuring that management does not act in a way that is self-beneficial but against the best interests of shareholders. If

management is successful in "capturing" the board, then a compliant board is unlikely to stop, limit or penalize such behaviour. Such a board does not bring value to the firm in terms of its monitoring capability as it simply follows the lead of management. The independence of the board is particularly vulnerable, since it is usual that some of the senior management members also act as executive directors, and thus there may exist a conflict of interest where there is a dual role of self-monitoring.

2.4.3 Audit committee

An effective audit committee is a vital part of the internal control mechanisms (Cadbury 1995; BRC 1999; NACD 2000; Ramsay 2001). The audit committee is a sub-committee of the full board of directors and is typically delegated specific financial oversight responsibilities (Menon and Williams 1994b). A primary part of this responsibility is auditor selection and retention with a mind to maintain the quality of the audit.

While most companies have an audit committee, there is currently no legal requirement in Australia for a company to have one. However, the Australian Stock Exchange does require listed companies to disclose whether an audit committee exists, and if not, to explain why, but it does not provide any prescription as to composition if one does exist. However, companies that are included in the S&P All Ordinaries Index at the beginning of its financial year must have an audit committee during that year (ASX 2005).

Similar to the full board, the effectiveness of the audit committee in carrying out its monitoring role is dependent on the quality of its members and the independence of the committee.

Given its specific responsibilities, the quality and independence of the audit committee is likely to have considerable impact on any monitoring activity that is related to the financial report and the auditing performed on it.

2.5 The external audit as a corporate governance mechanism

Another internal instrument to lower agency costs is the general purpose financial report issued by companies (Watts 1977). Such financial reports convey some of management's private information to shareholders and can aid in reducing the information asymmetry between the two, thereby lowering the monitoring costs of shareholders. However, since the managers are able to influence the financial statements, which are in turn used to evaluate them, they have incentives to manage the reports in their favour. As a result, this generates a demand for external auditing to provide assurance that the accounts are both true and fair.

External audits are used to increase the reliability of the financial statements (Chow 1982) by limiting the extent to which managers can manage their accounts.[12] The extent to which financial statements can reduce agency costs is then dependent in part on the quality of the audit as well as the board. To the extent that the reduction in

[12] An alternative source of demand for audit services is the 'insurance hypothesis' where in the event that there is a loss in investment the audit firm is treated as a major source of financial recovery if it can be proven that some form of audit failure occurred (Wallace 1987; Menon and William 1994a). However given the relatively low instance of audit litigation in Australia, the influence of the insurance hypothesis is likely to be low.

agency costs exceeds the cost of the audit, the audit can be seen as a value-adding activity.

2.5.1Audit quality

DeAngelo (1981) defines audit quality as the joint probability that an auditor will (1) detect a material misstatement in the financial report if one exists (which leads to auditor competence), and (2) report the misstatement if it is detected (which leads to auditor independence). This definition partitions audit quality into two dimensions, competence and independence.

The need for a competent auditor is self-explanatory. An incompetent audit is one where the probability of the auditor detecting material misstatements is low. As such, it is unlikely that the audit has altered the manager's representation of the firm and the value of the financial statements will be little different compared to before the audit. As audit competence increases, the probability of discovering misstatements increases, and if reported, will increase the reliability and hence value of the financial statements.

Equally important is auditor independence. A lack of auditor independence will erode audit quality by increasing the reluctance to report any misstatements that have been detected. Also, if the auditor is reluctant to report misstatements, the audit effort made *ex ante* may be reduced. A high level of competence and independence is compulsory for a high quality audit.

Auditors are bound by standards set by the professional body(ies) to which they belong[13]. These standards are in part concerned with the levels of competence and independence exhibited by the auditor, setting a minimum level of acceptable quality. Breaching this minimum level may result in sanctions by the professional body and regulators (such as the ASIC), litigation and subsequent loss of reputation. However, because audit quality is not directly observable by external parties, auditors may produce lower quality audits as long as the incentives to do so outweigh the disincentives and the probability of discovery.

2.6 Joint supply of audit and Non-audit services and its impact on audit quality

As stated before, the external audit is a mechanism used to improve the reliability of financial statements released to shareholders, reducing information asymmetry (and resulting agency costs) between managers and shareholders.

The provision of APNAS is a service that may have consequences for the quality of audit performed. There has been significant debate over the joint provision of audit and NAS because it can have two conflicting impacts on the quality of audit. On one hand it has the ability to increase the competence of the audit firm, but it also may increase the probability of a threat to the independence of the auditor.

2.6.1 Impact of APNAS on competence

NAS can impact on competence in two different ways. First, the general supply of NAS (to any client) by the audit firm increases the scale of the firm. This results in

[13] In May 2006, the Auditing and Assurance Standards Board (AUASB) in Australia issued the revised Australian Auditing Standards, which will be legally enforceable under the Corporations Act 2001, whereas, previously they did not have the force of law.

greater resources as well as an increased number and level of experts available within the firm, especially those that specialise in non-audit areas. The existence of a market for the firm's NAS justifies retaining such resources and expertise within the firm, which can then be applied, if needed, on certain audits in a more cost efficient manner.

This impact on auditor competence will be unaffected if audit firms are restricted (either by internal policy or external regulation) from supplying NAS to their audit client[14].

A second and more specific impact, Arrunada (1999) argues that supplying both non-audit and audit services can be beneficial with reductions in total cost and increased technical competence as the result of knowledge spillovers where audit and NAS share information both as a product and as a process. This occurs where the APNAS produces firm specific information that may be useful in conducting the external audit.

Understandably, audit firms hold the same view - that NAS can improve the quality of audit services by increasing the audit firm's competence:

> Audits in today's complex and increasingly international marketplace require a level of expertise and sophistication unimaginable when the Securities Act was enacted 67 years ago. Today's audits are extremely complex and require careful analysis of large amounts of specialized information in short periods of time. To effectively manage these complexities, many accounting firms rely on a wide array of audit and non-audit resources in conducting audits.

[14] This assumes that such restriction will not reduce the scale of the NAS division within the audit firm where the firm will seek clients that are not audited by them. However given the scale of their auditing division, such a restriction will remove a large number of potential clients. The relatively recent split of the consulting arms of several top tier accounting firms suggest this may be the case. A reduction in the scale of the NAS sections of the audit firm may result in reduced access to non-audit expertise available within the firm which may be needed in the conduct of an audit.

> Non-audit competencies are needed to produce a quality audit for corporations with complex financial structures. (Deloitte & Touche 2000)

Also, the Panel on Audit Effectiveness (2000) found that NAS can have a positive impact on audit effectiveness in about a quarter of the engagements in which both types of services had been provided to the client.

Simunic (1984), Palmrose (1986), Davis et al. (1993), Butterworth and Houghton (1995), Craswell et al. (1995) and Antle et al. (2004) all report a positive association between audit fees and NAS. Although unexpected, the results are still consistent with APNAS improving audit quality under an assumption that the demand for audit services is price elastic.

2.6.2 Impact of APNAS on independence

The main argument against the provision of both audit and NAS to the same client is that it will result in conflicts of interest, which threaten both real and perceived independence. It is this argument that has been strongly pressed in recent times in respect of corporate failures.

The Code of Ethics for Professional Accountants, published by the International Federation of Accountants (IFAC Ethics Committee 2001) and the revised Professional Statement F.1 of the Code of Professional Conduct, jointly issued by The Institute of Chartered Accountants in Australia and CPA Australia (ICAA and CPAA 2004)[15] both list various threats to independence. The Ramsay Report (2001)

[15] The Code of Professional Conduct in Australia has been replaced by the Code of Ethics for Professional Accountants in 2006, issued by the Accounting Professional and Ethical Standards Board (APESB)

highlighted the fact that many specific NAS commonly provided by major accounting firms have the potential to be threats to independence.

The "self-interest threat" occurs when the auditor could benefit from a financial interest in, or other self-interest conflict with the auditee. The "familiarity threat" occurs when a relationship between the auditor and auditee develops such that the auditor becomes too sympathetic to the client's interests. Both threats may occur where the auditor is recruiting senior management for the assurance client.

The "self-review threat" may occur where the firm audits any of the other services it provides, which includes valuation services, internal audit services, IT system services, legal services and corporate finance services.

The "advocacy threat" may occur where the audit firm has to promote its client in any other fashion besides that of its auditor, such as when it provides legal services or corporate finance services, advice or assistance (Ramsay 2001).[16]

In addition to the specific NAS, the purchase of any APNAS will increase the fee dependence of the auditor on the auditee. An "intimidation threat" occurs when the auditor is deterred from acting objectively by threats, actual or perceived, from the auditee. This and "self-interest threats" may occur if the provision of current and future NAS is affected by conflicts that arise during the external audit process.

[16] The Australian Securities and Investments Commission (ASIC) conducted a survey of the Group of 100 companies, of which 67 replied. ASIC found that as a percentage of total fee paid to the audit firm, 53.2% was for the audit service, 16.6% for tax advice, 4.6% for IT consultation, 4.5% for advice on funding or structure, 3.7% on the internal audit, 1.5% on recruitment, 1.5% for accounting advice and support, 0.6% on legal services, and 0.2% on insolvency and liquidation, leaving 12.5% on other services (ASIC 2002).

This view is reflected in a testimony given by the former chairman of the U.S. Securities and Exchange Commission, Arthur Levitt to a Senate subcommittee:

> As auditing becomes an ever-smaller portion of a firm's business with an audit client, it becomes harder to assume that the auditor will challenge management when he or she should, if to do so might jeopardize a lucrative consulting contract for the auditor's firm. Similarly, when an auditor's compensation is tied to his or her ability to cross-sell the firm's non-audit services to the audit client, the auditor has a direct economic incentive to avoid friction with management. Moreover, by providing consulting services to an audit client, a firm puts itself in the position of simultaneously serving two masters - as a consultant serving management, and as an auditor serving the public. In addition, certain services by their very nature raise independence issues. If, for example, an auditor is hired by an audit client to value an asset, to establish the amount of a reserve for an insurance company, or to prepare the accounting records, when the time comes for the same auditor to examine the financial statements, the auditor now must review his or her own work. In any of these situations, the auditor cannot, in any meaningful sense, be considered to be independent of the client. (Levitt 2000)

However, The Panel on Audit Effectiveness states that it was "not aware of any instances of non-audit services having caused or contributed to an audit failure or the actual loss of auditor independence." (The Panel on Audit Effectiveness 2000).

Using questionnaires and interviews with Malaysian auditors, loan officers and senior managers of public listed companies, Muhamad Sori and Karbhari (2006) found that the majority of respondents agreed with the statement that the provision of NAS to audit clients by the audit engagement team would threaten independence. On the other hand, the majority of respondents agreed that auditor independence would not be threatened if the provision of audit and NAS were provided by staff from a separate department and entity.

There has also been regulatory tightening up in the area of auditors providing NAS to their client due in part to recent large public corporate collapses. In the US, the Sarbanes-Oxley Act of 2002 prohibits the auditor from providing most NAS, including financial information system design and implementation services, internal audit services, legal and expert services unrelated to the audit. Audit committees will also need to pre-approve any allowed non-audit services.

In Australia, the Treasury enacted the Corporate Law Economic Reform Program (Audit Reform & Corporate Disclosure) Act in 2004 (referred to as the CLERP 9 Act) which requires that directors make a statement on whether they are satisfied that the provision of NAS by their auditors do not compromise the general standard of audit independence required by the Corporations Act.

2.7 Impact of the board of directors on APNAS

An important role of the board of directors is to oversee various internal control mechanisms within the firm. This oversight function extends to the content of the annual financial report, for which it is responsible. Due to this, the board must also monitor the quality of the external audit as it has a direct impact on the ability of the financial report to function as a control mechanism. Since APNAS is one factor that may potentially affect the audit quality, it is likely that the board of directors will monitor the purchase of APNAS within the firm.

2.7.1 Board of directors, audit committees, APNAS and audit quality

As detailed above, APNAS can have two different impacts on audit quality. It could increase quality through improved auditor competence as a result of knowledge

spillovers. However, it could also decrease quality due to an increased threat to auditor independence.

When circumstances generate a demand for NAS, the entity will then have to choose from whom to source the service. Management frequently seeks the auditor as a supplier of first choice because of favourable interpersonal relationships, and the audit firm's pre-existing knowledge of the auditee's operation, which may lead to shorter engagement times and lower costs (Houghton 2002).

If, as argued by Arrunada (1999), APNAS produces firm specific information that is useful in conducting the external audit, it can have a positive effect on auditor competence. This may increase the probability of discovering a misstatement. But the quality of the audit is determined in the first instance through the scope (or extent) of the audit. Where there is a demand for increased audit quality, the scope of the audit is increased. Therefore, an increase in competence can be obtained more directly through the purchase of additional audit services. Hence board and audit committees that seek a high quality audit will purchase more audit services rather than increasing APNAS purchase.

However, if APNAS has a negative effect on auditor independence as argued by Levitt (2000), it will reduce the quality of the audit which will in turn lower the probability of the auditor reporting any misstatements. Therefore boards and audit committees that seek a high quality audit will restrict management's purchase of NAS from its incumbent auditor.

Incidentally, those NAS that are likely to have the greatest impact on the quality of financial statements are those which are most likely to result in significant threats to independence, such as outsourced internal auditing. This suggests that if APNAS has the dual impact of increasing competence and decreasing independence, it is likely that the negative impact on independence will be dominant[17].

Hence the following 'independence proposition':

Firms with boards and audit committees that seek higher quality audit will purchase significantly less APNAS.

2.7.2 Monitoring hypothesis

Firms whose board and audit committee are good monitors will then seek to maximise the reduction of agency costs. As a result, the board will try to improve the ability of the annual financial report to reduce agency costs by maintaining a high quality external audit.

In support of this argument, Carcello et al. (2002) find that superior boards tend to spend more in audit fees. Also, Beasley and Petroni (2001) find that for property-liability insurance companies, the likelihood that a specialist brand name (Big 6) auditor is employed is positively related to the percentage of outsiders on the board, where specialist brand name auditor was used as a proxy for audit quality.

Abbott et al. (2003) found that firms with an independent and active audit committee bought less APNAS than other firms, which is supportive of the monitoring

[17] There is anecdotal evidence that this is now more keenly seen with auditees and auditors withdrawing from such joint supply.

hypothesis. This study extends Abbott et al. (2003) by examining a more comprehensive list of audit committee characteristics as well as the board of directors.

Taken together with the independence proposition above, this will produce the following 'monitoring hypothesis':

Firms with stronger boards and audit committees will purchase significantly less APNAS compared to other firms.[18]

2.8 Summary and conclusions

This chapter outlines the theoretical framework that this research is based on, illustrating the link between the board of directors and APNAS. It describes how conflicts of interests between managers and shareholders lead to agency costs. These agency problems are resolved by a set of institutional and market mechanisms referred to as corporate governance mechanisms. Two such mechanisms are the board of directors and the external audit.

The ability of the external audit to lower agency costs is dependent on its perceived quality, which is in turn dependent on the perceived independence of the auditor that performs the audit. The perception of auditor independence might be threatened if the audit firm jointly provide NAS and audit services to the same client. The board of directors who oversees various internal control mechanisms within the firm monitors the quality of the external audit.

[18] An alternative argument by Rediker and Seth (1995) is that different mechanisms may substitute for each other, suggesting an opposite relationship – that increasing monitoring from the board may be related to decreasing monitoring from the external auditors. This 'substitution hypothesis' is explored further as an additional test in section 11

This leads to the monitoring hypothesis, which predicts that firms with stronger boards will purchase less APNAS compared to other firms. This is further explored in Chapter Three where various aspects of the board as examined in greater detail.

CHAPTER 3. HYPOTHESIS DEVELOPMENT

3.1 Introduction

The previous chapter examined the theoretical framework of the agency problem, and the relationship between board of directors, the audit committee, the external audit and auditor provided non-audit services. First this chapter provides an overview of the literature looking for evidence of APNAS affecting auditor independence. In the previous chapter it was predicted that levels of APNAS are negatively related to stronger boards and audit committees. In this chapter, testable hypotheses are developed regarding different aspects of the board and audit committee, looking at both the quality of the board and sub-committee, and their independence.

Section 3.2 reviews the literature of empirical research regarding the effect of APNAS on auditor independence. Sub-section 3.2.1 reviews prior literature regarding investor's perception of APNAS while Sub-section 3.2.2 examines the relationship between APNAS and evidence of systematic earnings management. Sub-section 3.2.3 looks at how researchers try to link levels of APNAS to a few more highly visible aspects of the audit. Finally sub-section 3.2.4 looks at the relationship between levels of APNAS and a firm's willingness to appoint its auditor as a provider of NAS. Section 3.3 starts the discussion on the board of directors, and specific testable hypotheses are developed regarding the quality of the board of directors in section 3.4 and the independence of the board in section 3.5. Section 3.6 introduces the audit committee while section 3.7 and 3.8 develops the hypotheses for the audit committee. Section 3.9 looks at recent events and 2001 as an event year. Section 3.10 introduces and develops the substitution hypothesis which suggests that monitoring from various

corporate governance mechanisms can be substituted for one another. Section 3.11 provides a summary and conclusion for the chapter.

3.2 Effects of APNAS on auditor independence

There is an increasing number of studies dedicated to finding evidence of the effect of APNAS on auditor independence. The results of these empirical studies are mixed.

3.2.1 APNAS and investor perception

One approach was to investigate the investor's perceptions about the impact APNAS had on auditor independence. To this end, Frankel et al. (2002) found a negative association between APNAS and abnormal returns. They also modelled APNAS and found that the abnormal component (unexpected fees), scaled by total fees, was likewise negatively associated with abnormal returns. This suggests that investors did perceive excessive APNAS spending as impairing auditor independence. However when Ashbaugh et al. (2003) controlled for other firm specific disclosures in the proxy statements, they found no market reaction.

Brown et al. (2006) also found the negative association between APNAS and abnormal returns. In addition, when estimating the expected APNAS (and hence the unexpected component), they controlled for organisational attributes (such as other corporate governance structures) and they used prior year data. They found that the coefficient of the unexpected fee ratio was significant while that of the expected fee ratio was not. This suggests that the market was efficient in pricing the impact relative APNAS purchases might have on firm value based on previously available

information and that when new information is released, firms with higher than expected APNAS were further punished.

Rather than looking at abnormal returns, several studies investigated the relationship between APNAS and the earnings response coefficient (ERC), which would reflect the market's perception about the uncertainty of a firm's audit/earnings quality and thus the market valuation of the firm's earnings surprises. Francis and Ke (2004) find that firms with high APNAS had a lower ERC, suggesting that investors view that high APNAS lead to lower audit quality.

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In addition, Krishnan et al. (2005) also found that both relative and absolute levels of APNAS spending were negatively associated with the ERC in the three quarters in 2001 following the first-time disclosure of APNAS fees. They also modelled APNAS and found that the abnormal component (unexpected fees) was also negatively associated with the ERC in the second and third quarters following the release of the proxy.

Ghosh et al. (2004) also find that ERC decreases as APNAS fee ratio or client importance (measured as total fee divided by the auditor's total revenue from all clients) increases. However, when both measures are included, only client importance is statistically significant. They also found that there is no statistically significant change in ERC when non-audit fees increase or decrease (by more than 30 percent). This suggests that investors do not interpret these APNAS changes as the firm's "bribes or punishment" of auditors through APNAS, as suggested by Coffee (2004).

Gul et al. (2006) using Australian data also find a negative association between the ERC and APNAS. The also find that this association is stronger for firms audited by non-big 6 firms (they used 1993 and 1994 data), suggesting that the market perceive that big 6 firms are better able to maintain their independence when their clients purchase NAS from them.

3.2.2 APNAS and evidence of earnings management

Another way to observe the quality of the audit is to seek systematic evidence of earnings management. In those audits where independence is compromised, managers will have greater discretion to aggressively manage their earnings to produce favourable financial reports. Therefore, if APNAS has a detrimental effect on auditor independence, one would expect to find evidence of relatively more earnings management activity within firms with large APNAS purchases compared to those with lower levels of APNAS.

Also in the US, Frankel et al. (2002) found that firms with high APNAS are more likely to meet analyst forecasts and also tend to report higher absolute discretionary accruals, compared to firms with lower levels of APNAS. Both findings suggest a greater magnitude of earnings management in those firms. This suggests that APNAS does have a negative impact on auditor independence and that auditors tolerate a higher degree of earnings management in their clients with large APNAS spending. This argument was also supported by Ferguson et al. (2004) who found that UK firms with high APNAS purchases had higher mean absolute value of discretionary accruals.

However, a number of studies have challenged the results and generalisation of those results found in Frankel et al. (2002). In relation to firms with high APNAS being more likely to meet analyst forecast, Ashbaugh et al. (2003) was unable to find significance evidence that firms with high levels of APNAS meet or beat analyst forecasts.

Ashbaugh et al. (2003) also find that it is the income-decreasing discretionary accruals that drive the relationship between the APNAS fee ratio and absolute discretionary accruals suggesting that firms with high levels of APNAS tend to adopt a more conservative application of GAAP, whereas it is a more opportunistic application of GAAP that signals problems with auditor independence (Becker et al. 1998).

Chung and Kallapur (2003) find that after controlling for industry effects, the coefficient of the APNAS fee ratio loses its significance. Similar insignificant results were found when 3 industries (SIC codes 34 - manufacturing: fabricated metal products; 36 – manufacturing: electrical and electronic equipment; and 73 – business services including advertising, software, data processing, etc) were removed from the sample. However, they did not report if they found a relationship between high APNAS and absolute discretionary accruals in these three industries. Chung and Kallapur (2003) also used a different measure of the auditor's incentive to compromise their independence, namely, the importance of the client to the auditor. To proxy for this, they used a number of measures being, the ratio of (1) the client's total fees to the audit firm's total revenues, and (2) the client's non-audit fees to the adit firm's total revenues. Based on a few assumptions, they also calculated a surrogate measure of the practice-office revenues and used it to replace the audit

firm's total revenues in the above two ratios. They find that none of these ratios have any significant association to abnormal accruals.

Larcker and Richardson (2004) also find a statistically positive association between APNAS to total fee ratio and abnormal accruals in support of Frankel et al. (2002). However they find that this relationship only occurs for approximately 8.5% of the total sample, which have on average smaller market capitalization, lower book-to-market ratio, lower institutional holdings, and higher insider holdings. Similar to Chung and Kallapur (2003) they also used two additional measure of auditor independence, that is the ratio of APNAS and total fee to the audit firms total fee revenue. In addition, they used an audit fee model (from Simunic 1984 and Craswell et al. 1995) to estimate industry coefficients for both audit and non-audit fees and using the estimated residuals as abnormal audit fees and non-audit fees. They expect that the auditor will face greater threats to independence for firms with positive abnormal audit or non-audit fees since they are being paid higher than the industry norm and are presumably a more profitable client. In contrast to their earlier results, when using these four measures of auditor independence, they found a negative relationship between them and earnings quality, suggesting that auditors are less likely to allow abnormal accrual choices for firms where they have the greatest financial interest or dependence on.

Frankel et al. (2002)'s model was also replicated by Reynolds et al. (2004) who found the same relationship between high APNAS purchase and abnormal accruals. When the firms were divided into quartiles, the relationship was found to be unique to the

second smallest quartile. And that the relationship disappears after controlling for IPOs, industry and recent asset growth.

Antle et al. (2004), using both UK and US data, estimated a set of three simultaneous equations for audit fee, non-audit fees and abnormal accruals. From that system of simultaneous equations, they find a significant, negative effect of non-audit fees on abnormal accruals in the UK, and an insignificant relationship in the US, contrary to the results of Frankel et al. (2002).

3.2.3 APNAS and the externally visible aspects of the audit

Rather that investigate perceived auditor independence, researchers have also looked to possible impact APNAS has on independence in fact. One line of research has been to find a relationship between APNAS and the externally visible aspects of the audit quality. If APNAS impairs the independence of the external auditor, it may have an impact on the audit service supplied.

It has been argued that the joint provision of both services will lead to the possibility of fee dependencies and reluctance to jeopardize the contracting for NAS if an audit client is in conflict with the auditor. However, DeBerg et al. (1991) found no evidence of an association between the decision to change auditor and the levels of APNAS purchased. There was no difference in the levels of APNAS purchased by companies changing and not changing auditor and the level of APNAS did not help identify firms likely to change auditor. This suggests that audit firms are not more likely to retain audit clients who purchase high rather than low levels of APNAS. Assuming that a change in auditor may rise from auditor-client disagreement, high

levels of APNAS did not deter auditors from disagreeing with managers, suggesting that their independence was not compromised. Similarly, Barkess and Simnett (1994) found no relationship between auditor change and the level of APNAS purchased. Investigating New Zealand firms, Li et al. (2003) also found no significant relationship between non-audit fees and the stability of audit tenure.

A breach of independence will lead to a lower probability to report a detected misstatement. If this occurs, a lower incidence of audit qualifications is expected for firms where auditor independence is lower. Consistent with this argument, Wines (1994) found that firms with high levels of APNAS received a lower number of qualified audit opinions. Also, Sharma and Sidhu (2001) found that in a sample of bankrupt Australian companies, auditors had a tendency to not issue a going-concern qualification to clients with a high proportion of APNAS to total fees. However, Barkess and Simnett (1994), Craswell (1999) and Geiger and Rama (2003) found no relationship between levels of APNAS and the instances of audit qualifications. Also, DeFond et al. (2002) found no relationship between APNAS and the propensity to issue going concern opinions. Using New Zealand data, Li et al. (2003) found that only in one of three years under investigation (2000 from the period 1999-2001) there was a significant relationship between non-audit fees and audit qualifications or modifications.

Restatements of a firm's previously issued financial statement is another signal of possible audit failure. Raghunandan et al. (2003) compared the fees of firms that are identified as having restated their financial statements against firms without a

restatement. They found no statistically significant differences between the group in their APNAS, relative APNAS and total fee, as well as their unexpected component.

Kinney et al. (2004) also looked at firms that restated their financial statements and compared them with a matched sample. They found (1) no statistically significant positive association between fees for financial information system design and implementation services or internal audit services and restatements, (2) a positive association between unspecified NAS fees and restatements, and (3) a negative association between tax services fees and restatements. So the highly criticised (and banned under Sarbanes-Oxley) information systems design and internal audit services did not lead to a higher probability of restatements, while tax services (which is allowed under Sarbanes-Oxley) lead to a lower likelihood of restatements. However there are some unspecified NAS that is related to a higher probability of restatement.

Also, Ferguson et al. (2004) found that UK firms with high APNAS purchases (1) had a higher likelihood of their accounting practices being publicly criticised or subject to regulatory investigation, and (2) were more likely to restate prior financial statements or adjust current year results upon adoption of Financial Reporting Standard No. 12.

Given that there are severe consequences for providing low quality audit if discovered, it is likely that auditors would avoid independence threats that may result in changes in the perceived level of audit quality. This coupled with the low incidences of auditor changes and audit qualifications may be the reason for the mixed evidence in the studies reviewed above.

3.2.4 APNAS and a firm's willingness to appoint

Another line of research was to relate a firm's "willingness to appoint" (Houghton and Ikin 2001) with levels of APNAS purchased. One of the main factors influencing the willingness of the firm to purchase NAS from its incumbent auditor is its desire for a high quality audit. If APNAS lowers the actual or perceived independence of the auditor, then it is expected that firms identified as desiring high quality audit will purchase less APNAS[19].

Since one of the primary desired effects of an audit is to reduce agency costs, these costs have been used to measure the level of tolerance for lower independence. Parkash and Venable (1993) found that agency cost variables (management ownership, owner dispersion and leverage) could explain variations in the level of APNAS purchased. Firth (1997) also found support using agency cost variables (director shareholdings, large shareholdings and financial distress). Houghton and Ikin (2001) found that firms with large block holders (percentage of ownership held by the top five stockholders) and firms in industries with high political costs (highly regulated industries and industries with generous tax concessions) purchased less APNAS.

Corporate governance variables have also been used to measure the level of tolerance for lower auditor independence. Since corporate governance mechanisms are used to reduce agency costs, it is expected that corporate governance is related to APNAS.

[19] A related concept is the audit firm's "willingness to supply". It is often assumed that the audit firm is always willing to supply NAS to its auditee. However, if the audit firm feels that the joint supply will negatively affect the quality of audit (either perceived or in actuality) and if it is unacceptable to the firm, it will either refuse to supply the NAS or end the audit contract. Although such behaviour has not been documented in prior studies, it is likely that the audit firm's willingness to supply will decrease if there is increased public perception that APNAS has a detrimental effect on audit quality.

Abbott et al. (2003) found that firms with audit committees comprised solely of outside directors and meeting at least four times annually, purchase less APNAS than other firms.

This study substantially extends Abbott et al. (2003) by examining a longer time frame, and using more comprehensive corporate governance variables to describe the audit committees. In addition, it examines the board of directors which Abbott et al. does not. Also the use of Australian data provides a more stable data set for hypothesis testing, Australia having had mandated APNAS disclosure for many years.

3.3 Board of directors

The board of directors is something that should be taken into account given that the board holds significant influence over the selection of the auditor and the purchase of NAS. Similar to the quality of audit, the strength of monitoring provided by directors is dependent on the effectiveness/quality of the directors sitting on the board and their independence. The external auditors (and in some cases the consultants) are one avenue by which the board discharges its monitoring duties. If the joint provision of audit and NAS jeopardises the independence (and hence quality) of the audit function, it is expected that the board will exercise its influence to either change the selection of auditors or the provider of the NAS.

3.4 Quality of the board of directors

The quality of the board refers to the board's ability to monitor the firm and its executives and to safeguard the interests of the shareholders.

3.4.1 Size of the board

Jensen (1993) and Lipton and Lorsch (1992) argue that large boards are relatively ineffective and are easier for the CEO to control. It is argued that a large board is unwieldy and also increases problems such as director "free riding". Also, in large boards it becomes more difficult for the directors to express their ideas and opinions in the limited time available to them. This is supported by Yermack (1996) who found that there was a significant negative relationship between Tobin's Q and board size. They also find that there was a weaker link between performance and CEO turnover for companies with large boards, which suggests that large boards are less likely to punish the CEO for poor performance.

On the other hand, Chaganti et al. (1985) posit that larger boards are valuable for the breadth of their services. Klein (2002b) suggests that if the board of directors are small, the number of directors available to serve on the audit committee will also be limited, and find that board size is positively related to audit committee independence. Also, Xie et al. (2003) find that board size was negatively related to discretionary accruals suggesting that firms with larger boards have less aggressive earnings management and Anderson et al. (2004) find that the cost of debt was inversely related to board size suggesting greater creditor confidence in the integrity of financial accounting reports.

The primary concern regarding the board's monitoring in this paper deals only with one particular aspect of their expertise, which is their financial oversight. In addition, the contracting of APNAS is done primarily by management, with the board

restricting it if they felt it compromises the independence of the external audit. Since the model is mainly testing board's ability to restrict management, it is expected that the first argument will be dominant, that is, the larger the board, the more ineffective it is at restricting APNAS spending.

This leads to the following hypothesis:

H1.1: Entities with smaller boards will purchase less APNAS (relative to total fee[20]), other things being equal.

3.4.2 Multiple directorships

Fama and Jensen (1983) argue that multiple board appointments may be a measure of a director's quality. The appointment to multiple boards may be a result of superior performance by a company of which an individual is a director. If the market for directors is tied to corporate performance, the reputation of a director may generate additional offers of directorships. This reputation effect was supported by Ferris et al. (2003) who found that the previous performance of firms affects both the number of directorships the directors hold as well as their ability to attract additional board appointments. In addition, Kaplan and Reishus (1990) found that top executives of firms that cut dividends are less likely to obtain additional directorships and Shivdasani (1993) find that outside directors of firms that are targets of hostile bids are likely to hold fewer directorships than directors of non-target firms.

[20] As argued above, purchase of APNAS is expected to result in a lower perception of audit quality by the board and audit committee. The extent to which this happens is measured by the ratio of APNAS fee to total fee, where total fee is defined as audit fee plus APNAS fee. It is possible that the perception of audit quality is altered by both the levels of APNAS purchased as well as the amount purchased relative to the total fee paid to auditors. However, given that Australian regulations require the disclosure of both audit fee and APNAS fee, it is likely that shareholders and boards would focus more on the relative measure compared to a levels measure. This approach is consistent with much of the prior literature regarding APNAS which used APNAS relative to either audit fee (such as Firth 1997 and Abbott et al. 2003) or total fee (such as DeFond et al. 2002 and Frankel et al. 2002).

Directors with multiple directorships also have more to lose as poor performance in one firm may influence not only further appointments but also the current directorships held. This is supported by the results of Gilson (1990) who found that outside directors that leave boards of financially distressed firms hold approximately one-third fewer directorships three years after their departure.

However, an alternate argument posits that directors with multiple directorships are poor monitors for their company as they have insufficient time and resources to monitor numerous firms effectively. Core et al. (1999) report that firms with directors holding multiple appointments is associated with excess CEO compensation suggesting that such directors provide an inadequate check on management. Also, while Cotter et al. (1997) finds that firms that are the target of tender offers tend to have received higher premiums when independent directors dominate the board, multiple directorships did not seem to affect the premium offered.

However, Ferris (2003) found no evidence to support that multiple directorship was linked to a decrease in monitoring provided by the directors. They found that multiple directorships was not negatively related to firm value and that the announcement of a multiple director being appointed produced positive abnormal returns, suggesting that the market does not believe multiple directorships harm firm value. The multiple directors also tend to serve on more committees and attend more committee meetings, that they also serve on the more important audit and compensation committees with greater frequency and that the chair committees with greater frequency as well. They also found no statistically significant evidence of a relation between multiple

directorships and the likelihood that the firm will be named in a securities fraud lawsuit.

In addition, Shivdasani (1993) found that the monitoring capabilities of directors holding multiple board membership lie with the independent (or non-affiliated) non-executive directors.

This leads to the following hypothesis:

H1.2: Entities where the directors have a larger average number of multiple directorships among the outside directors will purchase less APNAS (relative to total fees) other things being equal.

3.4.3 Diligence

One of the recommendations made by Lipton and Lorsch (1992) concerns the frequency of meetings of the board. A concern is that board effectiveness may decline if there is insufficient time to complete board duties. Vafeas (1999) found that years of abnormally high meeting frequency follow periods of poor performance. In turn, operating performance rises following years of abnormally high meeting frequency. Xie et al. (2003) also found board meeting frequency to be associated with reduced levels of discretionary accruals.

This leads to the following hypothesis:

H1.3: Entities where the board meets more often will purchase less APNAS (relative to total fees), other things being equal.

3.4.4 Financial literacy

DeZoort (1997) and Bull and Sharp (1989) find that it was important for audit committee members to have accounting and auditing expertise. This was reflected by the Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees (1999) and National Association of Corporate Directors (2000) which suggested that all audit committees members need to be financially literate for the audit committee to work effectively. Also Ramsay (2001, 155) notes that financial literacy is "an important component of the general standards of care, skill and diligence required of company directors". DeZoort and Salterio (2001) found that audit committee members with greater audit knowledge were more likely to support an auditor who advocated a "substance over form" approach in dispute with client management. However, Xie et al. (2003) find that directors who are current or past executives in financial institutions were unrelated to discretionary current accruals.

While the monitoring activity of the board extends beyond financial matters, the particular monitoring activity of interest in this study is the quality of the external audit. It is expected that financial literacy is important and is a key determinant of the effectiveness of the director for this particular monitoring activity.

This leads to the following hypothesis:

H1.4: Entities where the board is made up of a higher proportion of financially literate outside directors will purchase less APNAS (relative to total fees), other things being equal.

3.5 Independence of the board of directors

As a monitoring tool, the value of the board of directors relies heavily on the independence of the board.

3.5.1 Outside directors

Non-executive directors have been argued to improve board quality by increasing its independence from management and working for the best interest of the shareholders (Cadbury 1995). They also have incentives to develop reputations as experts in decision control and monitoring (Fama and Jensen 1983).

Prior studies have found positive relationships between the independence of the Board of Directors with actions that are in the best interest of shareholders. Rosenstain and Wyatt (1990) found positive excess stock return around the announcement of a non-executive director appointment and no stock reaction when an executive director appointment was announced.

Lipton and Lorsch (1992) go one step further by differentiating non-executive directors as outside directors and 'grey' directors. They define grey directors as one that is connected with the company either as a manager or as a substantial customer or supplier of goods and services.

Brickley et al. (1994) found the average stock-market reaction to announcements of poison pills is positive when the board has a majority of outside directors and negative when it does not. Byrd and Hickman (1992) found that firms with a majority of outside directors experienced significantly higher announcement-date abnormal

returns during tender offer bids. Beasley (1996) compared firms with financial statement fraud against those that do not, finding that the no-fraud firms have significantly higher percentages of outside directors. Cotter et al. (1997) also found that in firms where outside directors have the voting control of the board, the initial tender offer premium, the bid premium revision, and the target shareholder gains over the entire tender offer period are higher.

Also, Klein (2002a) found a negative relation between board independence and abnormal accruals, suggesting independent boards are better at limiting earnings management, and Anderson et al. (2004) found that the cost of debt was inversely related to board independence suggesting greater creditor confidence in the integrity of financial accounting reports.

Being financially independent of management, independent directors have the ability to withstand pressure from the firm to manipulate earnings. However, independent directors are liable for negligent monitoring of their firm. As such, they have incentives to ensure that management is not conducing fraudulent earnings management activity. In support of this monitoring role of independent directors, Dechow, et al. (1996) and Beasley (1996) both find that there is a negative relationship between the number independent directors and incidence of financial statements fraud.

A high quality audit is one way in which directors can improve their monitoring of the firm. This is supported by Beasley and Petroni (2001) who found that for property-

liability insurance companies, the likelihood of employing a specialist brand name auditor is positively related with the percentage of independent directors on the board.

This leads to the following hypothesis:

H2.1: Entities where the board is made up of a higher proportion of outside directors will purchase less APNAS (relative to total fees), other things being equal.

3.5.2 Outside chairman

Cadbury (1995) recommends that the role of the chairman of the board of directors should be separate from that of the CEO. An important factor in determining the independence of the board is its independence from the CEO (Hermalin and Weisbach. 2002). It is argued that where the two roles are combined in one person, it will represent a considerable concentration of power, and it is more likely that the CEO will be able to control the board reducing its independence from management.

Boyd (1994) and Mallette *et al.* (1995) found that when one person serves as both the CEO and board chairman, CEO compensation is higher compared to firms where the two roles are separate. Also Phan and Lee (1995) found that CEO/chair duality lowers the probability of CEO dismissal[21]. On the other hand, Xie et al. (2003) found no relationship between CEO duality and discretionary current accruals.

This leads to the following hypothesis:

H2.2: Entities with an outside director as chairman will purchase less APNAS (relative to total fees), other things being equal.

[21] However it is rare in Australia for companies to have an executive chairman. If there are relatively small number of firms, they may be deleted and the variable removed from the model.

3.6 Audit Committee

The audit committee is a sub-committee of the full board and is typically delegated specific financial oversight responsibilities (Menon and Williams 1994b). This usually includes financial reporting, internal controls to address key risks, and auditor activity (BRC 1999; NACD 2000; AUASB et al. 2001). The audit committee is therefore an important and integral part of any test of the board and APNAS. A primary part of this responsibility is auditor selection and retention with a mind to maintain the quality of the audit, hence it is expected that a strong audit committee will result in improved audit and financial statement quality.

The stronger link between audit quality and the audit committee may result in increased sensitivity between characteristics of audit committee members and the willingness to purchase APNAS, compared with the board more generally. This could be due to several reasons. First, Reinstein et al. (1984) argue that in the event of an audit failure, outside, non-audit committee directors may be able to demonstrate fulfilment of their fiduciary duties by stating that they relied upon audit committee representations. This results in increased legal liability for committee members in matters regarding the firms relationship with its external auditor. Also Abbott et al. (2003) argue that audit committee service increases the reputation capital of these directors but a financial misstatement may also exacerbate reputation damage. Hence, audit committee directors have increased incentives to ensure that the financial statements are free of misstatements.

3.7 Quality of the audit committee

The quality of the audit committee refers to the committee's ability to monitor the firm and its executives and to safeguard the interests of the shareholders, within the scope of their financial oversight responsibility.

3.7.1 Size of the audit committee

Kalbers and Fogarty (1993) propose that audit committee effectiveness can be perceived as a function of audit committee power. Larger audit committees are legitimized by a meaningful designation from the board of directors and are thus more likely to be acknowledged as an authoritative body by the external and internal audit function.

Likewise, Anderson et al. (2004) argue that larger audit committees are consistent with boards committing more resources to improve financial reporting quality. In support of this, they found that yield spreads (being the difference between the yield to maturity on the firm's publicly traded debt and that of a Treasury security) are negatively related to audit committee size.

However, Abbott et al. (2004) found no relationship between auditor size and the likelihood of financial restatement. Also, Bedard et al. (2004) found no significant association between the audit committee size with the likelihood of aggressive earnings management.

This leads to the following hypothesis:

H3.1: Entities with larger audit committees will purchase less APNAS (relative to total fee), other things being equal.

3.7.2 Multiple committee memberships

Multiple audit committee memberships are likely to have the same reputation effects and relationship to quality that multiple board directorships do.

Carcello and Neal (2003) found that firms with audit committee members holding multiple directorships are related to a lower incidence of auditor dismissal after the issuance of going-concern reports. Likewise, Bedard et al. (2004) found that firms with audit committee members holding multiple directorships are less likely to show evidence of aggressive earnings management. However, Krishnan (2005) found no relationship between the presences of committee members with multiple directorships and the incidence of internal control problems being reported by an outgoing auditor.

This leads to the following hypothesis:

H3.2: Entities where the audit committee members have a larger average number of multiple audit committee memberships among the outside members will purchase less APNAS (relative to total fees), other things being equal.

3.7.3 Diligence

Prior studies have found that firms with more frequent meetings of the audit committee were more likely to use specialist auditors (Abbott and Parker 2000); have smaller yield spreads (Anderson et al. 2004);; and smaller likelihood of restatements

of annual results (Abbott et al. 2004). On the other hand, Krishnan (2005) found no relationship between frequency of audit committee meetings and incidence of internal control problems being reported by an outgoing auditor.

Also, Xie et al. (2003) found that frequent audit committee meetings are related reduced discretionary accruals. However, Bedard et al. (2004) ranked the firms in his sample of 3,451 firms based on the size of their abnormal accruals and selected the 100 largest positive and 100 largest negative abnormal accruals, defining this group as the aggressive earnings management sub-sample. This was compared with a low earnings management sub-sample made up of firms with the lowest level of abnormal accruals centred around zero. They found no significant association between the frequency of audit committee meeting with the likelihood of aggressive earnings management.

This leads to the following hypothesis:

H3.3: Entities where the audit committee meets more often will purchase less APNAS (relative to total fees), other things being equal.

3.7.4 Financial literacy

A director's financial literacy is arguably even more vital to carrying out the responsibility of a audit committee member compared to that of the board.

DeFond et al. (2005) found a positive market reaction (three-day cumulative abnormal return) to the appointment of a primarily accounting financial expert to the audit committee. Also audit committee with at least one member with a financial or

accounting background (Bedard et al. 2004) and those who were from investment banking (Xie et al. 2003) were found to be associated with firms having less evidence of earnings management. While Krishnan (2005) found that financial literacy is related to decreased incidence of internal control problems being reported by an outgoing auditor.

However, Carcello and Neal (2003) found no evidence of a relationship between audit committee member's financial literacy and incidences of auditor dismissal after the issuance of going-concern reports. Likewise, Anderson et al. (2004) did not find any relationship between audit committee member financial literacy and yield spreads.

This leads to the following hypothesis:

H3.4: Entities where the audit committee is made up of a higher proportion of financially literate outside members will purchase less APNAS (relative to total fees), other things being equal.

3.8 Independence of the audit committee

Prior research found that independent audit committee members were more likely to use a specialist auditor (Abbott and Parker 2000); were negatively associated with the occurrences of restatements of annual results (Abbott et al. 2004); were related to a higher probability that a financially distressed firm will receive a going concern report from the auditor, suggesting greater auditor independence (Carcello and Neal 2000), and were related to a lower incidence of auditor dismissal after the issuance of going-concern reports (Carcello and Neal 2003); were associated with a significantly lower

cost of debt financing (Anderson et al. 2004); were negatively associated with aggressive earnings management (Bedard et al. 2004); were related to decreased incidence of internal control problems being reported by an outgoing auditor (Krishnan 2005); and a negative relation to abnormal accruals (Klien 2002)

This leads to the following hypotheses:

H4.1: Entities where the audit committee is made up of a higher proportion of outside directors will purchase less APNAS (relative to total fees), other things being equal.

H4.2: Entities with an outside director as an audit committee chairman will purchase less APNAS (relative to total fees), other things being equal.

3.9 Background events and 2001 as an event year

3.9.1 Increasing scrutiny on APNAS

Of particular interest is whether the relationship between APNAS and the board and/or audit committee has changed over time given recent events.

Several developments in the business world have increased media attention and regulatory scrutiny on auditor independence, particularly in respect of APNAS. This has implications for the legal/political/regulatory mechanisms as well as the internal control mechanism of the firm.

One reason that APNAS has first come under criticism is due to its increasing prevalence and size relative to the audit services provided by accounting firms. Levitt

(2000b) pointed out that NAS fee growth has been greater than audit fee over the past decade.

> Consulting and other management advisory services now represent 50 percent of the revenues of the five largest firms – up from just 13 percent in 1981...
>
> from 1993 to 1999, the average annual growth rate for revenues from management advisory and similar services has been 26%, nearly three times the comparable growth rate for audit services (9%) and double the growth rate for tax services (13%) (Levitt 2000b).

Frankel et al. (2002) reported that the mean (median) ratio of APNAS to total fees is 0.49 (0.51)[22]. Also, Abbott, Parker, Peter and Rama (2001) found that the ratio of APNAS fees to audit fees was greater than 1.01 for 25% of the sample firms with total assets smaller than $200 million, 53% of firms with total assets between $200 million and $1 billion, and 75% of firms with total assets greater than $1 billion[23].

These figures were similar to those found in Australia. Houghton and Ikin (2001) reported that APNAS as a percentage of total fees climbed from about 37% in 1990 to 54% in 1999 for the top 1000 Australian companies. In a survey conducted by the Australian Securities and Investments Commission (ASIC) of the Group of 100 firms (of which 67 responded) they find that 90% of the respondent bought NAS from their external auditor, and that these services amounted to 46.8% of the total fees paid to their external audit firm (ASIC 2002).

This trend in part has led the U.S. SEC to issue Proposed Rule S7-13-00, Revision of the Commission's Auditor Independence Requirements in June 2000. The proposed

[22] The sample of Frankel et al. (2002) is comprised of 3,074 firms with proxy statement in the SEC's EDGAR database. This sample does not include financial institutions and firms that changed their auditors.

[23] The sample of Abbott Parker, Peter and Rama (2001) is comprised of 265 firms that have filed their proxy and 10-K statements by the cut-off date.

rule, among other things, restricted the provision of certain APNAS by accounting firms to their auditee (SEC 2000a). This was followed by a very public campaign by the then chairman of the SEC Arthur Levitt to restrict threats to auditor independence. This cumulated in the release of Final Rule: Revision of the Commission's Auditor Independence Rules in November 2000. The rules regarding APNAS were much less restrictive than those in the proposed rules (SEC 2000b). However, these were subsequently greatly reinforced by the Sarbanes-Oxley Act of 2002, which is discussed further below.

3.9.2 Corporate collapses, 2001 as an event year

Another major reason that auditor independence has come under increased scrutiny is due to a number of high profile corporate collapses of large companies. This has been coupled with allegations that auditor independence was compromised which prevented early discovery of the problems plaguing the failed companies. This led to concerns regarding the adequacy of regulations regarding auditor independence.

In March 2001, the ASIC put HIH Insurance Ltd into provisional liquidation. HIH was Australia's second largest insurer and is Australia's largest ever corporate collapse. Also, in April 2001, Harris Scarfe holdings Ltd went into receivership. Both companies were criticised over the relationships they had with their auditors.

> In 1999-2000, Harris Scarfe paid PwC $120,000 for the audit and another $211,284 for other services. A Harris Scarfe director, John Patten, who joined the board in 1996, is a former PwC partner. PwC replaced Ernst & Young as Harris Scarfe's auditor in 1998.
>
> In 1999-2000, HIH's long-time auditor, Arthur Andersen (now called Andersen), was paid a $1.7 million audit fee and $1.6 million for other services. The HIH chairman, Geoffrey Cohen, and a former HIH director, Justin Gardener, are former Andersen partners. (Thornson 2001, 34).

The debate revolving around the SEC-imposed regulations regarding auditor independence was largely confined to the US until Enron filed for the nation's largest bankruptcy in December 2001. For the year 2000, Enron paid US$25 million for its audit services and paid another US$27 million to its auditors for other work.

Byrnes et al. (2002, 52) writes:

> What Arthur Levitt couldn't achieve in a year of public hearings, speeches, and backroom bargaining, the Enron scandal may now accomplish ...
>
> ... in many people's minds the rising importance of consulting has contributed to a decline in auditor scepticism. It simply looks bad to have Andersen earning more on consulting to Enron than on auditing.

Also Nussbaum (2002, 39-40) writes:

> With enormous pressures to produce earnings growth, auditors are being turned into enablers. They forsake their traditional role of outside skeptic for that of inside business partner and they reject their age-old function of discloser of information for that of master magician who hides the financial rabbit.
>
> Investor confidence is crucial to the success of our economic system. This confidence is threatened by not only the Enron scandal but by the dramatic decline in accounting standards.

The unprecedented size of the HIH and Enron collapses has greatly increased concern over the quality of accounting and that of the external auditors. This has had some impact on the legal/political/regulatory mechanisms.

The biggest impact was the introduction of the Sarbanes-Oxley Act of 2002 (SOX) in the US. SOX, among other things, transformed the once largely self-regulated industry into one controlled by a quasi-governmental agency, the Public Company Accounting Oversight Board (PCAOB). Further, auditors were prohibited from

provided most of the NAS to their audit client, including financial information system design and implementation services, internal audit services, legal and expert services unrelated to the audit. It also mandates the all firms must have an audit committee; that all its members must be independent of management; must state if the committee contains a financial expert, and if not, why not and that the audit committee is responsible for the appointment of the external auditor. In addition, the audit committee must approve the purchase of any APNAS that are not prohibited under SOX.

In Australia, the Ramsay Report was commissioned in part due to the high profile corporate collapses in 2001. Among its recommendations is to increase disclosure of the fees paid for APNAS divided into categories of services, as well as the audit committee (or in the absence of such a committee, the board of directors) to disclose whether the provision of such NAS was compatible with maintaining auditor independence. It also recommends the establishment of an Auditor Independence Supervisory Board whose task, in part, is to monitor the adequacy of NAS disclosure as well as strengthening the role of audit committees (Ramsay 2001).

Professional Statement F.1 of the Code of Professional Conduct jointly issued by the Institute of Chartered Accountants in Australia (ICAA) and CPA Australia (CPAA) covers the professional conduct of accountants, including auditors. In December 2001, the ICAA and CPAA released a re-exposure draft on F.1 which was subsequently approved and issued by both professional bodies (ICAA and CPAA 2004). The re-exposure draft covers in great detail cases where NAS are provided to

an audit client and the threats to independence that may arise, which should be avoided[24].

While the Corporate Law Economic Reform Programme (CLERP) was in progress for several years, the contemporary events no doubt influenced the content and timing of the CLERP 9 discussion paper which was released in September 2002. The reform proposals led to the Corporate Law Economic Reform Program (Audit Reform & Corporate Disclosure) Act 2004 (Cth) (i.e. the CLERP 9 Act) which became law on 30 June 2004. Among other things, it requires that directors make a statement on whether they are satisfied that the provision of NAS by their auditors do not compromise the general standard of audit independence required by the Corporations Act. It also prescribes best practices in the structure of the board (majority of independent directors and independent chair) and audit committee (only non-executive directors, a majority of independent directors, independent chair who is not chairperson of the board, at least three members) and requires companies to explain if they do not comply.

The circumstances described above are expected to decrease the willingness of auditees to purchase APNAS. Also the willingness of audit firms to supply APNAS is likely to decrease.

Also, the increasing publicity of APNAS as a threat to auditor independence may decrease shareholders' perception of audit quality in the presence of APNAS. This then reduces their perception of the reliability of financial statements. This can have

[24] The Code of Professional Conduct was replaced on 1 July 2006 by the Code of Ethics for Professional Accountants, issued by the newly established Accounting Professional and Ethical Standards Board (APESB)

the effect of increasing the reluctance of the board to purchase NAS from the firm's incumbent auditor in an attempt to prevent price protection by the shareholders.

H5: Relationship between the proportion of APNAS relative to total fees and board and audit committee characteristics will significantly alter between the period leading up to 2001 and 2002.

3.10 Substitution hypothesis

An alternative to the 'monitoring hypothesis' proposed above is the 'substitution hypothesis'. Rediker and Seth (1995) argue that firms manage agency costs by depending on the efficiency of a bundle of corporate governance mechanisms rather than on the efficiency of any single mechanism, and that different mechanisms may substitute for each other. They find evidence for this when they considered the monitoring by outside directors against the monitoring by large outside shareholders, mutual monitoring by inside directors and the incentive effects of shareholdings by managers.[25]

If the audited financial statements are taken as a corporate governance mechanism, then the 'substitution hypothesis' would suggests that firms that have other strong governance mechanisms may find an equilibrium agency cost minimisation position with a relatively lower quality audit. As a result, a strong board may be more tolerant

[25] There are also evidence of more specific substitution effects among corporate governance mechanisms. For example, Anderson et al (1993) find that firms with greater assets-in-place have higher expenditures on auditing compared to directorships, and higher expenditure on internal auditing compared to external auditing. And Zajac and Westphal (1994) find that firms that are more risky are more likely to rely on board monitoring rather then incentive contracts for top managers arguably due to risk aversion. Also there has been some research into the substitutability of internal corporate governance mechanisms with external mechanisms, in particular the takeover market. (see Brickley and James 1987, Morck et al. 1983, Walsh and Seward 1990, and John and Senbet 1998)

of threats to auditor independence, such as APNAS purchase because they have strong control mechanisms. This may be due to the increased monitoring ability of the board, which reduces the market's estimation of the agency costs associated with APNAS, and the subsequent price protection. That is, the market is more tolerant of APNAS because they rely on the board to monitor audit quality and to ensure that the financial statements are of high quality.

Taken together with the independence proposition above will produce the following 'substitution hypothesis':

Firms with stronger boards will purchase more APNAS compared to other firms.

Prior literature has suggested that the auditee's production-investment attributes may influence whether the substitution or monitoring hypothesis is dominant. Anderson et al. (1993) argued that firms with higher assets-in-place have a greater capability to support debt and debt contracts which increases the reliance on accounting numbers. Hence there is a greater need for monitoring from auditors. On the other hand, firms with high growth options rely less on debt contracts and therefore less on accounting numbers and auditors in the determination of payoffs to claimholders. These claimholders are more concerned with the optimal exercise of the growth options to maximise the value of their claim. Directors are specialised in the role of monitoring managers who develop and exercise these options. Hence in high growth option firms, there is greater reliance on the monitoring from the board compared to auditors. In support of their argument, they found that firms with greater assets-in-place spent relatively more on auditing compared to directorships. This was also supported by Matolcsy et al. (2001) who found that firms with higher asset-in-place relative to

growth options spend more on auditing compared to directorship. Also, they found that the percentage of outsiders on the board was value relevant for firms with high growth options but was not value relevant for low growth option firms.

This suggests that the auditee's production-investment attributes may have different impacts on the demand for monitoring by auditors and the board. The substitution hypothesis is arguably dominant on the two extreme ends of the production-investment spectrum, that is firms with higher assets-in-place relative to growth options (which will substitute audit monitoring for board monitoring) and firms with higher growth options relative to assets-in-place (which will substitute board monitoring for audit monitoring). This is because for firms with higher assets-in-place (growth options) relative to growth options (assets-in-place) the value added from board (audit) monitoring will be less relative to audit (board) monitoring.

For firms with moderate levels of both assets-in-place and growth options, there is no ex ante expectation that the value of board is greater or less relative to audit monitoring. Hence the monitoring effect is more likely to be dominant for such firms.

This leads to the following two hypotheses.

H6.1: For entities with high levels of assets-in-place or growth options, those with stronger boards and audit committees will purchase more APNAS (relative to total fees) compared to other entities, other things being equal.

H6.2: For entities with moderate levels of assets-in-place and growth options, those with stronger boards and audit committees will purchase less APNAS (relative to total fees) compared to other entities, other things being equal.

3.11 Summary and conclusions

This chapter reviews the literature looking for evidence of APNAS affecting auditor independence and develops the hypotheses to be tested in this study. The hypothesis are developed from the monitoring hypothesis in the previous chapter where it was predicted that levels of APNAS are negatively related to stronger boards and audit committees. Testable hypotheses are then developed regarding different aspects of the board and audit committee, looking at both the quality of the board and sub-committee, and their independence.

In addition, background events are examined which impacted on the political and regulatory landscape which may have affected the relationship between APNAS and board / audit committee characteristics, in particular the year 2001.

Finally, the substitution hypothesis is developed as an alternative to the monitoring hypothesis, which predicts an opposite relationship between the APNAS spending and the board (and audit committee).

Chapter 4 describes the research methods used to test these hypotheses.

CHAPTER 4. RESEARCH METHOD

4.1 Introduction

The previous chapter reviewed the literature regarding the effect of APNAS on auditor independence and developed hypotheses to be tested in this study. This chapter looks at the setting and sample period to be investigated and introduces the base model to be used to test the hypotheses. The variables to be used in the study are defined and examined. Next, a replication of Abbott et al. (2003) is carried out and extended by introducing a more variables and also breaking their composite variable into its components. Then, the study is extended by examining changes to the relationship between APNAS and the test variables over the sample period and considering the substitution hypothesis as an alternative to the monitoring hypothesis.

Section 4.2 highlights the setting chosen for this study while section 4.3 discusses the sample period. Section 4.4 introduces the base multivariate regression model used to test the hypotheses. The dependent variable is defined in section 4.5. Section 4.6 discusses the variables used to test the hypotheses. Sub-section 4.6.1 looks at the variables that proxy for the quality of directors, while sub-section 4.6.2 examines the variables used to proxy the independence of directors. Sub-sections 4.6.3 and 4.6.4 then look at the variables that proxy for the quality and independence of the audit committee. Section 4.7 defines the control variables that will be used in the regression. Section 4.8 extends the research beyond the base model by looking into changes to the relationship between APNAS and the test variables over time. Sub-section 4.9 discusses the methodology to test for the presence of the substitution

hypothesis in the sample. Section 4.10 provides a summary and conclusion for the chapter.

4.2 Setting

Australia was chosen as the setting for this study. This is because Australian firms are required to disclose in their financial report the amount of APNAS purchased during the year. While similar regulations exist in the U.S., they have only been active since February 2001. Using Australian data gives access to pre-2001 APNAS data. This provides data to compare pre- and post- 2001 APNAS purchasing data[26]. Since the year 2001 is the event year, it is likely that there will be increased noise from the event. Also as it is the first year that the disclosure regulation is active, there can be expected to be significant volatility in the reported figures for the next few years. This volatility may arise from changes in firm policy that may be a result of changing regulations. Also inconsistent measurement across firms may also induce volatility in the figures. Since the regulation in Australia was active for a longer time, the APNAS figure should be more stable in terms of firm policy choice and reliable in terms of measurement.

4.3 Sample period

As discussed above, the merger of Price Waterhouse and Coopers and Lybrand in July 1998 might result in an abnormal increase in APNAS for the first year. This is because if a firm was audited by one and purchased NAS from the other, the merger will cause the NAS to be one that is provided by its auditor.

[26] In Australia, only the total APNAS fee is needed to be disclosed, unlike in the US, where IT fees are separately disclosed. As such finer analysis of the different APNAS and their possible different effects cannot be made.

Also, 2002 sees the integration of Andersen with Ernst and Young in Australia. Unlike the merger of Price Waterhouse with Coopers and Lybrand, the integration was a result of the collapse of Andersen which may carry with it additional confounding variables in the years that immediately follow. While the 2002 data for the firms that used to be audited by Andersen might have the same abnormal increase in APNAS for that first year, it is also the first year after the event period. Additional testing will be done removing firms audited by Andersen in 2001 from the 2002 sample.

As a result, the period chosen for the research is 1999 to 2002 inclusive. This will avoid some of the noise associated with the formation of PriceWaterhouseCoopers, and the collapse of Andersen and allow the examination of the effects of the corporate collapses of 2001.

4.4 Base Model

Consistent with the extant APNAS literature, this study uses a pooled multivariate regression to address the research questions. The basic regression framework is shown below:

$$\text{APNAS/TFEE} = \alpha + \beta_i \text{ Board variables} + \beta_j \text{ Audit committee variables} + \beta_k \text{ Control variables} + \varepsilon$$

The full regression model is as follows:

$$\text{APNAS/TFEE} = \alpha + \beta_1 \text{ B\_SIZE} + \beta_2 \text{ B\_DSHIPS} + \beta_3 \text{ B\_MEET} + \beta_4 \text{ B\_FINLIT} + \beta_5 \text{ B\_OUTSIDE} + \beta_6 \text{ B\_CHAIR} + \beta_7 \text{ A\_MSHIP} + \beta_8 \text{ A\_MEET} + \beta_9 \text{ A\_FINLIT}$$

$$+ \beta_{10} \text{ A\_OUTSIDE} + \beta_{11} \text{ A\_CHAIR} + \beta_{12} \text{ BLOCK} + \beta_{13} \text{ BIG5}$$
$$+ \beta_{14} \text{ AUD\_SPEC} + \beta_{15} \text{ ALOCKS} + \beta_{16} \text{ MINING}$$
$$+ \beta_{17} \text{ FININCIAL} + \beta_{18} \text{ UTILITIES} + \beta_{19} \text{ ASSETS}$$
$$+ \beta_{20} \text{ ALLSUBS} + \beta_{21} \text{ RESTRUCT} + \beta_{22} \text{ NEWCEO}$$
$$+ \beta_{23} \text{ NEWISSUE} + \beta_{24} \text{ NEGROI} + \beta_{25} \text{ LEVERAGE}$$
$$+ \beta_{26} \text{ NAS\_SPEC} + \beta_{27} \text{ US\_LIST} + \beta_{28} \text{ US\_SUB} + \beta_{29} \text{ YEAR1}$$
$$+ \varepsilon$$

This regression is estimated using pooled data from the four years 1999-2002. This is due to the large number of variables and relatively small sample derived from Australian data. While the pooled regression provides more efficient estimation, it assumes that the regression parameters do not change over time. Given the increasing level of debate regarding APNAS, the assumption may not hold. However, given that the change is expected to be only in one direction, and that the study only investigates relationships between the dependent and test variables (that is the study is not attempting to predict the dependent), the results of the pooled regression are still valid.

Separate yearly regressions are also done however their reduced sample size may reduce the power of the test.

The variables including control variables are defined and explained below.

Beyond the base model, a replication of Abbott et al. (2003) using Australian data will be conducted. Where possible the same or similar the control variables are used. As

is discussed below, three of the variables are not available. The results will be compared against those found in their study (which used American data) and will be further analysed by considering a wider range of variables.

4.5 Dependent variable

The dependent variable (APNAS/TFEE) used in the multivariate regression model is the ratio of non-audit fees to the total fees paid to the auditor (sum of non-audit fees and audit fees). This is consistent with prior studies (Frankel et al. 2002 and DeFond et al 2002).

So as to determine if there is any sensitivity over the choice of dependent variable, several other dependent variables, used in prior studies, were also considered in the present study. In particular, the ratio of non-audit fees to audit fee (as used in Abbott et al. 2003) as well as levels of APNAS (such as DeBerg et al. 1991 and Barkess and Simnett 1994) by using the natural log of APNAS. Additional testing was done using these alternate variables, but the regression producing the best results used APNAS/TFEE as the dependent variable. The results of those tests are reported in Appendix 2.1

4.6 Test variables

Listed below are the independent variables used to test the hypotheses.

4.6.1 Quality of the board of directors

B_SIZE is defined as equal to the number of directors on the board. Large boards are argued to be relatively less effective and of lower quality. Therefore support for H1.1 is found if the coefficient for B_SIZE is positively significant.

B_DSHIP is defined as equal to the average number of directorships held by outside directors in the board. The average number of directorships is calculated by taking the total number of board appointments held by outside directors divided by the number of directors on the board. The number of directorships held by the directors is counted only among those firms that are in the population of listed firms in the Connect 4 database for that year, which roughly equates to the top 500 firms. Multiple directorships are argued to be an indication of the quality of a director. Also, directors with multiple directorships have more to lose from poor performance so there is an increased incentive to be an effective director. Therefore support for H1.2 is found if the coefficient for B_DSHIP is negatively significant.

B_MEET is defined as equal to the number of board meetings held for the reporting year. This number is calculated by taking the sum of the total number of meetings attended by each director divided by the number of directors. This is to take into account possible reduced diligence that may result from meeting absentees. Board effectiveness may decline if there is insufficient time to complete the board's duties. Therefore boards who meet frequently are expected to be more effective. Hence, support for H1.3 is found if the coefficient for B_MEET is negatively significant.

B_FINLIT is defined as equal to the percentage of outside directors with a financial or accounting background in the board. A director is defined as having a financial background if he/she works or have worked in the banking, accounting, auditing, or financial industries, or is a member of accounting or financial professional bodies, or holds business related degrees. It is expected that directors with financial background to be more aware of the external audit process which is the particularly monitoring activity of interest in this study. H1.4 is supported if the coefficient for B_FINLIT is negatively significant.

4.6.2 Independence of the board of directors

B_OUTSIDE is defined as equal to the percentage of outside directors on the board. Outside directors are defined as non-executive directors with no connection to the firm other than as its director.

B_CHAIR is defined as equal to 1 if the chairman of the board of directors is an outside director.

Directors with no other ties to the firm are expected to be independent from management and are able to carry out their monitoring duties without undue influence from the executives of the firm. H2.1 and H2.2 are supported if the coefficients for B_OUTSIDE and B_CHAIR are significantly negative.

4.6.3 Quality of the audit committee

A_SIZE is defined as equal to the number of members on the audit committee. Large audit committees are argued to be consistent with the board and firm committing more

resources to improve financial reporting quality. Therefore support for H3.1 is found if the coefficient for A_SIZE is negatively significant.

A_MSHIPS is defined as equal to the average number of audit committee memberships held by outside audit committee members in the audit committee. The average number of membership is calculated by taking the total number of audit committee memberships held by the audit committee members divided by the number of members. Similar to directors with multiple directorships, audit committee members with multiple memberships in audit committees are expected to be better monitors of the firm. Support for H3.2 is found if the coefficient for A_MSHIP is significantly negative[27].

A_MEET is defined as equal to the number of audit committee meetings held for the reporting year. This number is calculated by taking the sum of the total number of meetings attended by each director divided by the number of directors. This variable is used to proxy for the diligence of the audit committee. H3.3 is supported if the coefficient for A_MEET is significant and negative.

A_FINLIT is defined as equal to the percentage of outside audit committee members with a financial or accounting background in the audit committee. A member is defined as having a financial background if he/she works or has worked in the banking, accounting, auditing, or financial industries, or is a member of accounting or

[27] Prior studies (such as Carcello and Neal 2003, Bedard et al. 2004 and Krishnan 2005) used multiple directorships (as opposed to multiple audit committee membership) as a measure of the audit committee member's quality or 'governance expertise'. Because multiple board membership is already being investigated in the board variables, the audit committee A_MSHIPS variable is refined to only include additional directorships in which the director is also a member of their audit committee, providing a stronger measurement of the committee member's experience as a governance expert or its reputation effects.

financial professional bodies, or holds of business related degrees. Given the financial oversight responsibilities of the audit committee, financial literacy is an important element for the audit committee to work effectively. H3.4 is supported if the coefficient for A_FINLIT is negatively significant.

4.6.4 Independence of the audit committee

A_OUTSIDE is defined as equal to the percentage of outside directors in the audit committee. Outside directors are defined as non-executive directors with no connection to the firm other than as its director.

A_CHAIR is defined as equal to 1 if the chairman of the audit committee is an outside director.

Since the audit committee is typically responsible for auditor selection and monitoring of the external independent audit, it is vital for the audit committee itself to be independent from management. An audit committee that is made up of directors with no other ties to the firm are expected to be independent from management and is able to carry out their monitoring duties without undue influence from the executives of the firm. H4.1 and H4.2 are supported if the coefficients for A_OUTSIDE and A_CHAIR are significantly negative.

4.7 Control variables

In addition to the test variables, the possible effects of the following variables on levels of APNAS being purchased relative to total fee are controlled for.

4.7.1 Corporate governance variables

It is possible that other corporate governance mechanisms besides that of the board may be related to APNAS purchase, either as a complement or as a substitute to the monitoring aspects of the external audit.

BLOCK. Defined as the percentage of outstanding voting control held by investors holding at least 5 percent of such shares and who have no connection to the firm. Shleifer and Vishny (1997) suggest that blockholders play a crucial role in successful corporate governance systems. This is because the blockholder's share of the firm is significant enough to potentially give them the ability and incentive to monitor and influence what is happening in the firm (Denis 2001). Blockholder ownership was found to be significantly negative related to APNAS in Abbott et al. (2003). The expectation is that BLOCK will be negatively related to APNAS/TFEE.

4.7.2 Audit quality variables

There are several factors that affect the quality of the external audit in addition to APNAS, these include:

BIG5. Defined as equal to 1 if the firm's auditor is a Big 5 audit firm. It is expected that BIG5 will be positively related to APNAS/TFEE, due to the wider array of expertise and services that they can provide.

AUD_SPEC. Defined as equal to 1 if the firm's auditor commands more than 15% of the audit service fees within that industry. Auditors that specialise in certain industries are argued to provide increased audit quality compared to other auditors

(Craswell et al. 1995). In order to maintain that high quality, audit firms may be less willing to sell NAS to their audit clients. Audit firms identified as specialists will also affect the total fee if their clients pay a premium for their audit service. However the specialisation on audit services may not translate to NAS. Therefore there is no *ex ante* directional expectation for AUD_SPEC.

ALOCKS is defined as the number of other firms that share the same auditor and directors. If an auditor is reluctant to disagree with board policy over an accounting issue for fear of disfavour by a director who currently sits on boards of other companies also audited by that auditor, auditor independence is potentially compromised (Jubb and Houghton 1999). It is expected that ALOCKS will be positively related to APNAS/TFEE.

4.7.3 Industry variables

The firm's industry may have several effects on APNAS purchase. Firstly, the various audit firms may specialise in certain industries providing quality differentiated audit or NAS. This may affect the demand and supply for the audit and NAS. This is discussed in more detail elsewhere.

Secondly, certain industries have higher political costs involved. This results in greater scrutiny on the firms and increased incentives for high quality financial statements. As a result, these industries will have a lower tolerance for perceived threats to auditor independence and may purchase less APNAS if it is viewed as having a negative impact (Houghton and Ikin 2001).

To separate the possible influences from the 3 industry, each is assigned one dichotomous variable. *MINING* is defined as equal to 1 if the firm belongs to the Resource industries (industry codes 01, 02, 03 and 04 under the ASX classification and codes 1010 and 1510 under the GICS classification). *FINANCIAL* is defined as equal to 1 if the firm belongs to the Banking and Finance industries (industry codes 16, 17, 18, 19 and 20 under the ASX classification and codes 4010, 4020 and 4030 under the GICS classification). *UTILITIES* is defined as equal to 1 if the firm belongs to Infrastructure and Utilities industries (industry codes 05 and 18 under the ASX classification and codes 5010 and 5510 under the GICS classification).

It is expected that the three industry variables will be negatively related to APNAS/TFEE.

4.7.4 Variables to proxy for Auditee's ex ante need for NAS

The amount of APNAS bought is dependent on the auditee's ex ante demand for NAS, from any provider (Houghton and Ikin 2001). A firm with low levels of APNAS may be simply due to the fact that it did not require any.

ASSETS is defined as natural log of total assets. It is expected that the larger the auditee, the greater its demand for services (Houghton and Ikin 2001). This may be due to increased complexity and/or the firm engaging in a wider range of activities. Palmrose (1986) and Abbott et al. (2003) found that larger firms are more likely to purchase higher APNAS. The expectation is that ASSETS will be positively related to APNAS/TFEE.

ALLSUBS is defined as the natural log of the total number of subsidiaries. It is expected that the more complex the nature of company the greater the need for NAS (Houghton and Ikin 2001). It is expected that ALLSUBS will be positively related to APNAS/TFEE.

RESTRUCT is defined as equal to 1 if terms such as: "corporate restructuring", "business rationalisation", the "disposal of business segments", the "installation of new, group-wide re-engineering (BPR)" are used to describe significant events, disclosed in the statement of profit and loss or elsewhere in the annual report, that have taken place during the financial year; equal to 0 otherwise. When the auditee undergo restructuring, there is a demand for a variety of services that the auditor can provide, such as strategic planning, implementation coordination, tax, management information systems, human resources, acquisition and merger, and finance advice (Houghton and Ikin 2001). It is expected that RESTRUCT is positively related to APNAS/TFEE.

NEWCEO is defined as equal to 1 if there is a change in CEO for that year; equal to 0 otherwise. The recent appointment of a new CEO can herald a "shake-up" within the auditee (Houghton and Ikin 2001). Similar to restructuring, this may generate additional demand for services provided by the auditor. NEWCEO is expected to be positively related to APNAS/TFEE.

NEWISSUE is defined as equal to 1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; equal to 0 otherwise. An auditee that issues new stock is more likely to need expert advice which can be

provided by the auditor (Houghton and Ikin 2001). It is expected that NEWISSUE will be positively related to APNAS/TFEE

NEGROI is defined as equal to the two-year average ROI (operating profit before tax divided by book value of total assets at year end) if it is negative; equal to 0 otherwise. Firms that are performing badly have additional incentives to seek external advice to improve the firm, generation demand for NAS (Houghton and Ikin 2001). Parkash and Venable (1993) find that firms with higher levels of profitability had higher APNAS. However, Firth (1997) and Abbott et al. (2003) did not find any significant relationship. NEGROI is expected to be negatively related to APNAS/TFEE.

4.7.5 Other variables

LEVERAGE is defined as long-term debt to shareholder's equity. The agency problem underlies the theory for the demand for good corporate governance and a quality audit. The leverage of the firm is a typical proxy for the extent of agency conflict. Firms with less agency conflict may have less need for monitoring. Parkash and Venable (1993) and Firth (1997) found that leverage was negatively related to APNAS. However, Abbott et al. (2003) did not. The expectation is that LEVERAGE will be negatively related to APNAS/TFEE.

NAS_SPEC. Defined as equal to 1 if the firm's auditor commands more than a given proportion of the APNAS within that industry (15% has been used in the literature before, see for example Houghton and Ikin 2001). If the auditor is an industry leader in the supply of NAS there is greater incentive (superior service) for the auditee to

approach their auditor to supply NAS. This also reflects the auditor's willingness to supply NAS to their own audit clients within that particular industry[28]. As a result, firms audited by auditors identified as APNAS specialists will tend to spend more on APNAS. Therefore NAS_SPEC is expected to be positively related to APNAS/TFEE.

US_LIST is defined as equal to 1 if the firm is listed on a U.S. stock exchange. *US_SUB* is defined as equal to 1 if the firm has subsidiaries in the U.S. This is expected to have an impact because firms with U.S. connections will have higher exposure to the APNAS debate revolving around the proposed changes to the SEC regulations during the sample period. Both US_LIST and US_SUB are expected to be negatively related to APNAS/TFEE.

YEAR1. Defined as equal to 1 if it is the first year of an audit engagement. This is likely to have several conflicting effects on the APNAS purchased for that year. First, when a firm changes auditors, it may abnormally increase the level of APNAS. If the new auditor provided substantial NAS previously, that service will technically become APNAS. If the NAS contract lasts for multiple years, it may be inconvenient or costly to change sources causing firms to have higher or lower levels of APNAS in the years following the change than it would otherwise. On the other hand, if the new auditor did not provide substantial APNAS previously, the first year of the audit may result in the firm buying less APNAS then normal because it may still be unfamiliar with the new auditor and the range of NAS it provides. As it is unclear which effect is dominant, there is no ex ante directional expectation for YEAR1.

[28] For example, in an industry with high political costs, auditors may be reluctant to supply particular NAS to their audit clients. As a result, even if they specialise in the provision of NAS in that industry, their reluctance to supply to their audit clients would result in low levels of APNAS.

4.8 Background events with 2001 as an event year

As described in the previous chapter, there is an increasing level of scrutiny and public debate regarding APNAS over the time 1999-2002, which came to a peak at 2001 which witnessed several high profile corporate collapses. To investigate whether this caused a significant change in the relationship APNAS and board and audit committee characteristics, the base model is estimated for the year 2002 and compared with the results from those from a 3-year pooled sample for 1999-2001. H5 is supported if there is a substantial difference between the two.

How the relationship between APNAS and the test variables change will depend on the director's reaction to the event. If on average, the directors increase their review of APNAS it would be expected that the relationship will strengthen, especially in regards to the independence variables of the board and audit committee.

On the other hand, the relationship between APNAS and the test variables might weaken if the variation of the director's tolerance of APNAS is reduced to an extent where changes in the measures of directorial strength result in little change in the director's tolerance of APNAS.

Despite this, given the high profile nature of the collapse and media scrutiny, it is expected the relationship between APNAS/TFEE and B_DSHIP and A_MSHIP will strengthen given their strong association to reputation effects for the director.

As an additional test, the first three years are also separately estimated and compared. The increasing prevalence of APNAS may cause the relationship between APNAS and the board and audit committee to weaken as joint provision of audit and NAS become more commonplace. Alternatively, the increasing magnitude of APNAS fee relative to the audit fee may cause boards and audit committees to be more concerned, thereby increasing the sensitivity of relationship between APNAS and the board.

The increased debate regarding the negative impact APNAS may have on audit quality could mean that directors are becoming more educated and aware of the impact of APNAS. This would weaken the relationship between board quality and APNAS as increasingly "low" quality directors become aware of APNAS as a problem prior to the "shock" of 2001. On the other hand, these factors could lead to independent boards and audit committees being increasingly reluctant to approve of large APNAS spending.

4.9 Substitution hypothesis

To test the substitution hypothesis, the sample was first ranked by AIP/GO for each of their year, and then divided into 4 sub-samples based on the yearly quartiles of AIP/GO. Where, AIP is defined as the accounting book value of total assets. And GO is defined as the market value of common equity plus book value of total debt and preferred stock.

Three sub-samples were then created from the quartiles. The high AIP sub-sample, which is comprised of firms with the highest assets-in-place relative to growth option, is made up of the firms in the highest quartile of AIP/GO. The high GO sub-sample,

which is comprised of firms with the highest growth options relative to assets-in-place, is made up of the firms in the lowest quartile of AIP/GO. The moderate sub-sample, which comprises of firms with a moderate level of both, is made up of the firms in the remaining two quartiles. Additional testing was conducted where the sub-samples were divided into thirds instead of quartiles, and their results are presented in Appendix 2.6.

The hypothesis testing is then done separately for the three sub-samples. Table 1 summaries the predicted signs for each test variable and sub-sample.

Table 1 Predicted signs for the high growth option, moderate and high assets-in-place sub-samples

	High Growth Option	**Moderate**	**High Assets-in-place**
Board of Directors Variables			
B_SIZE	-	+	-
B_DSHIP	+	-	+
B_MEET	+	-	+
B_FINLIT	+	-	+
B_OUTSIDE	+	-	+
B_CHAIR	+	-	+
Audit Committee Variables			
A_SIZE	+	-	+
A_MSHIP	+	-	+
A_MEET	+	-	+
A_FINLIT	+	-	+
A_OUTSIDE	+	-	+
A_CHAIR	+	-	+

4.10 Summary and conclusions

The thesis investigates possible effects of APNAS on auditor independence by looking at its relationship with the board of directors and the audit committee. This

chapter identifies the setting of the study in Australia and the sample period to be used.

To test the hypotheses developed in the previous chapter, a multivariate regression is used with the ratio of APNAS fee to total fee as a dependent variable. Variables that proxy for the quality and independence of the board of directors and audit committee are defined and examined. Also a list of other variables expected to explain variation in APNAS are defined and discussed. These are used as control variables in the regression. Table 2 below lists the variables used in this model, their expected sign and a brief definition.

Table 2 Summary of variables used and their predicted signs

Variable	Predicted sign	Definition
Dependent variable		
APNAS/TFEE		non-audit fees / total fees
Board of Directors Variables		
B_SIZE	+	number of board members
B_DSHIP	-	average number of directorships by outside directors on the board
B_MEET	-	sum of board meetings attended by each director divided by the number of directors
B_FINLIT	-	percentage of outside directors with a financial background on the board
B_OUTSIDE	-	percentage of outside directors on the board
B_CHAIR	-	=1 if chairman is an outside director; 0 otherwise
Audit Committee Variables		
A_SIZE	-	number of audit committee members
A_MSHIP	-	average number of audit committee memberships by outside audit committee members on the board
A_MEET	-	sum of audit committee meetings attended by each director divided by the number of directors

A_FINLIT	-	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	-	percentage of outside directors in the audit committee
A_CHAIR	-	=1 if chairman of audit committee is an outside director; 0 otherwise
Control Variables		
BLOCK	-	% owned by blockholders
BIG5	+	=1 if auditor is Big 5, 0 otherwise
AUD_SPEC	?	=1 if auditor has > 15% of audit services
ALOCKS	+	natural log of the number of other firms which has same auditor and director
MINING	-	=1 if Resource; 0 otherwise
FINANCIAL	-	=1 if Banking and Finance; 0 otherwise
UTILITIES	-	=1 if Infrastructure and Utilities; 0 otherwise
ASSETS	+	natural log of total assets
ALLSUBS	+	natural log of the total number of subsidiaries
RESTRUCT	+	=1 if firm undergone restructuring; 0 otherwise
NEWCEO	+	=1 if there is a change in CEO; 0 otherwise
NEWISSUE	+	=1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	-	= two-year average ROI if negative, =0 otherwise
LEVERAGE	-	long term debt to shareholder's equity
NAS_SPEC	+	=1 if auditor has > 15% of APNAS
US_LIST	-	=1 if listed on an American stocks exchange, =0 otherwise
US_SUB	-	=1 if it has an American subsidiary, =0 otherwise
YEAR1	?	=1 if first year of audit engagement; =0 otherwise

The study is also extended by examining how events of 2001 might change the relationship between APNAS and the test variables. To this end, the relationship between APNAS/TFEE and the test variables in 2002 are compared with the 3 year period immediately preceding it.

Lastly, to test the substitution hypothesis developed in the previous chapter, the firms are ranked by their ratio of AIP to GO. Three sub-samples are created by splitting the firms into quartile, one for the firms with the highest levels of AIP relative to GO, one

for the firms with the highest levels of GO relative to AIP and one for moderate levels of both. Each of the sub-samples are then individually tested and compared.

Chapter 5 reports and discusses the results of the hypotheses testing carried out.

CHAPTER 5. DATA ANALYSIS AND RESULTS

5.1 Introduction

This chapter reports and analyses the tests of the hypotheses that were developed in Chapter 4. The base model is a multivariate regression testing variables that proxy for the quality and independence of the board of directors and audit committee. This regression is estimated for the 4-year 1999-2002 pooled sample.

In addition, a replication of Abbott et el. (2003) is carried out and expanded using the variables from the base model of this study.

Supplementary regressions were also estimated for 2002 and the results are compared against those of 1999-2001, as well as individual regressions for each of the other three years.

Due to potential problems that may arise form the closely related test variables, the regression is run using only one set of variables, one testing only board of directors variables, and another testing only audit committee variables.

Next, to test the substitution hypothesis, the sample is then split into three sub-samples with the firms ranked on their ratio of assets-in-place to growth options.

The sample selection process is described in section 5.2 while the descriptive statistics are discussed in section 5.3. Section 5.4 outlines the regression analysis from the base model using the 4-year pooled sample. Section 5.5 replicates the research design of

Abbott et al. (2003) using Australian data and extends it by expanding the variables used. Section 5.6 reports the results of the regression analysis on the year 2002 and compares it with those of the previous three years while Section 5.7 outlines the results from the individual regressions for each of the remaining years. Section 5.8 looks at the results when the regression is run with only one set of test variables, that is, testing with only board of director variables or only audit committee variables. Section 5.9 discusses the results for the regressions used to test the substitution hypothesis. Finally section 5.10 summarises the results found in this chapter while section 5.11 provides a summary and conclusion for the chapter.

5.2 Sample selection

The sample selection is made from the population of listed firms included in the Connect 4 database for the years 1999 to 2002 which roughly equates to the top 500 firms of those years. Firms with insufficient data are eliminated from the sample, as are those that changed their financial year, and those whose financial report is denominated in a currency except the Australian dollar. Finally, several firms were deleted from each year for various reasons, including those that underwent IPO during the year, those with no activity in the year, or in the previous year, companies that follows US GAAP, those with negative shareholder's equity, firms that underwent a merger or de-merger, and those under voluntary administration. After the elimination, samples for 1999 to 2002 were respectively 400, 387, 401 and 414 firms. Table 3 shows the number of firms deleted from the each sample.

Table 3 Firm sample selection procedure

	1999	2000	2001	2002
Connect 4 sample	513	511	513	501
less Missing data	97	87	98	66
	416	424	415	435
less change in financial year	7	17	7	6
	409	407	408	429
less foreign currency	3	6	3	3
	406	401	405	426
less others*	6	14	4	12
Final sample	400	387	401	414

*example: IPO, no activity in this year, no activity in previous year, company follows US GAAP, negative shareholder's equity, merger or demerger, voluntary administration.

Table 4 shows the distribution of the sample firms by industry. Because of a change in 2001 from the old ASX industry codes to the Global Industry Classification Standard (GICS), the industry breakdown for 2002 is different from the other 3 years. As was expected, the resource and financial sectors are well represented in the sample.

Table 4 Sample selection distribution by industry

Industry	Code	1999	2000	2001	Industry	Code	2002
Gold	01	36	25	21			
Other Metals	02	16	14	22			
Diversified resources	03	4	2	2			
					Materials	1510	76
Energy	04	23	23	22	Energy	1010	19
Infrastructure & utilities	05	8	11	13			
					Utilities	5510	6
Developers & contractors	06	23	19	18			
Building Materials	07	13	12	9			
Alcohol & tobacco	08	12	10	8	Food Beverage & Tobacco	3020	29
Food & household	09	13	15	17	Food & Staples	3010	6
Chemicals	10	5	4	5			
Engineering	11	10	5	4			
Paper & packaging	12	5	6	6			
					Capital Goods	2010	27
					Commercial Services & Supplies	2020	25
Retail	13	23	25	22	Retailing	2550	22
					Automobile	2510	4
					Consumer Durables & Apparel	2520	9
Transport	14	6	6	4	Transportation	2030	7
Media	15	18	19	18	Media	2540	19
Banking & finance	16	12	13	12	Banks	4010	6
Insurance	17	6	4	4	Insurance	4030	5
					Real Estate	4040	21
Telecommunications	18	15	15	14	Telecommunication	5010	7
Investment & financial services	19	43	40	37	Diversified Financials	4020	37
Property Trusts	20	10	11	8			
Health care & biotechnology	21	22	25	40	Health Care	3510	27
					Pharmaceuticals & Biotechnology	3520	20
Miscellaneous industrials	22	49	55	67			
Diversified industrials	23	14	14	13			
Tourism & leisure	24	14	14	15	Hotels Restaurants & Leisure	2530	13
					Software & Services	4510	20
					Technology Hardware & Equip	4520	9
Total		400	387	401			414

Table 5 panel A shows the distribution of sample firms by their auditor, while panel B shows the same information in percentages. Unsurprisingly after their merger, PricewaterhouseCoopers holds the largest percentage of clients (roughly a quarter of the sample) except for 2002 where Ernst & Young absorbed many of Andersen's partners (and clients). The percentage of firms employing a Big 5 audit firm for the period 1999 to 2002 respectively are 78.2%, 80.4%, 80.0% and 80.7%.

Table 5 Sample selection distribution by auditor

Panel A: Distribution of observation by auditor 1999-2002

Auditor	1999	2000	2001	2002
Andersen	31	43	47	-
Deloitte Touche Tohmatsu	47	44	46	46
Ernst & Young	59	58	63	105
KPMG	78	74	79	81
PricewaterhouseCoopers	98	92	86	102
Non Big 5	87	76	80	80
Total	400	387	401	414

Panel B: Distribution of observation by auditor 1999-2002 in percentages

Auditor	1999	2000	2001	2002
Andersen	7.75	11.11	11.72	-
Deloitte Touche Tohmatsu	11.75	11.37	11.47	11.11
Ernst & Young	14.75	14.98	15.71	25.36
KPMG	19.50	19.12	19.70	19.57
PricewaterhouseCoopers	24.50	23.78	21.45	24.64
Non Big 5	21.75	19.64	19.95	19.32
Total	1	1	1	1

5.3 Descriptive statistics

Table 6 reports the descriptive statistics of the variables used for hypothesis testing for the 4-year 1999-2002 pooled sample as well as for each of the four years 1999-2002.

Table 6 Descriptive statistics

Panel A: Descriptive statistics for the 4-year pooled sample 1999-2002 (n = 1602)

	Mean	Standard Deviation	quartile 1	Median / sum*	quartile 3
Audit ^	377.4783	1022.916	54	116.1525	290.025
APNAS ^	566.7654	1983.571	20	87.907	323.2423
APNAS/TFEE	0.411346	0.251605	0.211521	0.413427	0.615168
B_SIZE	6.265918	2.091104	5	6	7
B_DSHIPS	1.638874	0.663947	1.166667	1.5	2
B_MEET	10.57526	4.160759	8	10.54861	12.46043
B_FINLIT	0.442357	0.234289	0.25	0.428571	0.6
B_OUTSIDE	0.622504	0.221964	0.5	0.666667	0.8
B_CHAIR*	0.702871	0.457136		1126	
AC *	0.915106	0.278811		1466	
A_SIZE	2.857054	1.281265	2	3	3
A_MSHIP	1.361292	0.843458	1	1.25	1.666667
A_MEET	2.861472	1.869319	2	2.666667	4
A_FINLIT	0.490075	0.338448	0.25	0.5	0.666667
A_OUTSIDE	0.687254	0.349063	0.5	0.75	1
A_CHAIR *	0.870162	0.33623		1394	
BLOCK	41.51788	23.52179	23.485	40.785	58.24
BIG5 *	0.798377	0.401337		1279	
AUD_SPEC *	0.501873	0.500153		804	
ALOCKS	0.954432	1.441266	0	0	1
MINING *	0.190387	0.392729		305	
FINANCIAL *	0.149189	0.356385		239	
UTILITIES *	0.055556	0.229133		89	
Total Assets ^	3616336	24393640	58931	164521.9	683378
Subsidiaries	29.98002	62.38909	4	12	29.75
RESTRUCT *	0.131086	0.3376		210	
NEWCEO *	0.089263	0.285213		143	
NEWISSUE *	0.262797	0.44029		421	
NEGROI	-0.51628	10.76763	0	0	0
LEVERAGE	1.317706	23.26382	0.003857	0.223078	0.593308
NAS_SPEC *	0.499376	0.500156		800	
US_LIST *	0.087391	0.282495		140	
US_SUB *	0.272784	0.44553		437	
YEAR1 *	0.064295	0.245354		103	
AIP/GO	0.944059	0.943908	0.546672	0.880954	1.141177

* dichotomous variables expressed as the sum instead of median

^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Table 6 Descriptive statistics
Panel B: Descriptive statistics for 1999 (n = 400)

	Mean	Standard Deviation	quartile 1	Median / sum*	quartile 3
Audit ^	362.46	904.61	50	113.38	262.23
APNAS ^	455.83	1462.9	14.045	61.5	253.21
APNAS/TFEE	0.3803	0.2450	0.1846	0.3751	0.5783
B_SIZE	6.34	2.1981	5	6	7.25
B_DSHIPS	1.7055	0.8032	1.1607	1.5	2
B_MEET	10.446	4.0144	8	10.444	12.2
B_FINLIT	0.4313	0.2391	0.25	0.4167	0.6
B_OUTSIDE	0.6216	0.2240	0.5	0.6667	0.8
B_CHAIR*	0.69	0.4631		276*	
AC *	0.925	0.2637		370*	
A_SIZE	2.8575	1.2693	2	3	3
A_MSHIP	1.4238	1.0964	1	1.25	1.6667
A_MEET	2.9348	1.9464	2	2.667	4
A_FINLIT	0.4874	0.3474	0.25	0.5	0.6667
A_OUTSIDE	0.6936	0.3533	0.5	0.75	1
A_CHAIR *	0.8675	0.3395		347*	
BLOCK	41.271	23.562	22.923	40.63	57.854
BIG5 *	0.7825	0.4131		313*	
AUD_SPEC *	0.415	0.4933		166*	
ALOCKS	1.0825	1.6240	0	0	1
MINING *	0.1975	0.3986		79*	
FINANCIAL *	0.1525	0.3600		61*	
UTILITIES *	0.0575	0.2331		23*	
Total Assets ^	3,197,430	19,308,932	64459	168368	618876
Subsidiaries	27.61	47.799	4	12	27
RESTRUCT *	0.1625	0.3694		65*	
NEWCEO *	0.06	0.2378		24*	
NEWISSUE *	0.2275	0.4197		91*	
NEGROI	-1.4692	20.179	0	0	0
LEVERAGE	3.3876	46.320	0.0082	0.2585	0.6143
NAS_SPEC *	0.4725	0.4999		189*	
US_LIST *	0.0825	0.2755		33*	
US_SUB *	0.245	0.4306		98*	
YEAR1 *	0.035	0.1840		14*	
AIP/GO	0.9485	0.7513	0.5893	0.9092	1.1721

* dichotomous variables expressed as the sum instead of median
^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Table 6 Descriptive statistics
Panel C: Descriptive statistics for 2000 (n = 387)

	Mean	Standard Deviation	quartile 1	Median / sum*	quartile 3
Audit ^	353.863	975.95	55.85	115	279.36
APNAS ^	639.679	2176.2	21.75	99.349	341.5
APNAS/TFEE	0.42737	0.2669	0.2128	0.4357	0.6511
B_SIZE	6.32558	2.0906	5	6	7
B_DSHIPS	1.65030	0.6510	1.1429	1.4444	2
B_MEET	10.6930	4.3507	7.6344	10.67	12.548
B_FINLIT	0.45278	0.2378	0.2857	0.4286	0.6
B_OUTSIDE	0.60688	0.2236	0.5	0.6154	0.7817
B_CHAIR*	0.67959	0.4672		263*	
AC *	0.90698	0.2908		351*	
A_SIZE	2.86047	1.3219	2	3	3
A_MSHIP	1.33899	0.7940	1	1.25	1.6667
A_MEET	2.87137	2.0340	2	2.667	4
A_FINLIT	0.48432	0.3452	0.25	0.5	0.6667
A_OUTSIDE	0.64734	0.3562	0.4643	0.6667	1
A_CHAIR *	0.83721	0.3697		324*	
BLOCK	41.6916	24.207	23.18	40.28	58.76
BIG5 *	0.80362	0.3978		311*	
AUD_SPEC *	0.48837	0.5005		189*	
ALOCKS	0.94832	1.4096	0	0	1
MINING *	0.16538	0.3720		64*	
FINANCIAL *	0.14729	0.3549		57*	
UTILITIES *	0.06718	0.2507		26*	
Total Assets ^	3,861,449	25,752,296	72,542	189,655	711,220
Subsidiaries	30.8889	68.367	5	12	29
RESTRUCT *	0.23256	0.4230		90*	
NEWCEO *	0.13437	0.3415		52*	
NEWISSUE *	0.27907	0.4491		108*	
NEGROI	-0.0641	0.2760	0	0	0
LEVERAGE	0.74963	3.5501	0.0085	0.2750	0.6394
NAS_SPEC *	0.48320	0.5004		187*	
US_LIST *	0.08786	0.2834		34*	
US_SUB *	0.28165	0.4504		109*	
YEAR1 *	0.02326	0.1509		9*	
AIP/GO	1.02415	1.4106	0.5387	0.9328	1.1904

* dichotomous variables expressed as the sum instead of median
^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Table 6 Descriptive statistics
Panel D: Descriptive statistics for 2001 (n = 401)

	Mean	Standard Deviation	quartile 1	Median / sum*	quartile 3
Audit ^	389.573	1143.4	55	115	293.04
APNAS ^	672.278	2599.9	24.241	96	353.90
APNAS/TFEE	0.42193	0.2505	0.2166	0.4430	0.6226
B_SIZE	6.20449	2.0756	5	6	7
B_DSHIPS	1.60981	0.6022	1.1667	1.5	2
B_MEET	10.3848	3.6649	8	10.45	12.556
B_FINLIT	0.43760	0.2341	0.25	0.4	0.6
B_OUTSIDE	0.627	0.2255	0.5	0.6667	0.8
B_CHAIR*	0.69825	0.4596		280*	
AC *	0.91272	0.2826		366*	
A_SIZE	2.88529	1.2910	2	3	3
A_MSHIP	1.33561	0.6944	1	1.3333	1.6667
A_MEET	2.72750	1.6944	2	2.4	4
A_FINLIT	0.48197	0.3324	0.25	0.5	0.6667
A_OUTSIDE	0.69019	0.3414	0.5	0.75	1
A_CHAIR *	0.87781	0.3279		352*	
BLOCK	41.4643	23.663	23.09	40	58.54
BIG5 *	0.80050	0.4001		321*	
AUD_SPEC *	0.52619	0.4999		211*	
ALOCKS	0.86284	1.3033	0	0	1
MINING *	0.16708	0.3735		67*	
FINANCIAL *	0.13217	0.3391		53*	
UTILITIES *	0.06733	0.2509		27*	
Total Assets ^	4,130,311	27,332,040	49,229	151,037	695,155
Subsidiaries	32.5811	74.068	4	12	32
RESTRUCT *	0.05985	0.2375		24*	
NEWCEO *	0.13217	0.3391		53*	
NEWISSUE *	0.22943	0.4210		92*	
NEGROI	-0.47564	7.5129	0	0	0
LEVERAGE	0.64964	2.4254	0.0034	0.2004	0.6083
NAS_SPEC *	0.47631	0.5001		191*	
US_LIST *	0.08978	0.2862		36*	
US_SUB *	0.29177	0.4551		117*	
YEAR1 *	0.02993	0.1706		12*	
AIP/GO	0.92199	0.6681	0.5587	0.8794	1.1694

* dichotomous variables expressed as the sum instead of median
^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Table 6 Descriptive statistics
Panel E: Descriptive statistics for 2002 (n = 414)

	Mean	Standard Deviation	quartile 1	Median / sum*	quartile3
Audit ^	402.350	1052.5	54.25	127.37	325.10
APNAS ^	503.589	1476.6	24.188	98.144	361.96
APNAS/TFEE	0.41608	0.2425	0.2322	0.4128	0.5997
B_SIZE	6.19807	2.0023	5	6	7
B_DSHIPS	1.59199	0.5752	1.1667	1.5	1.8512
B_MEET	10.7744	4.5537	8.2589	10.625	12.613
B_FINLIT	0.44795	0.2266	0.2857	0.4083	0.6
B_OUTSIDE	0.63361	0.2149	0.5	0.6667	0.8
B_CHAIR*	0.74155	0.4383		307*	
AC *	0.91546	0.2785		379*	
A_SIZE	2.82609	1.2482	2	3	3
A_MSHIP	1.34661	0.7316	1	1.25	1.6667
A_MEET	2.91116	1.7926	2	2.9063	4
A_FINLIT	0.50589	0.3297	0.3333	0.5	0.6667
A_OUTSIDE	0.71556	0.3434	0.5	0.8167	1
A_CHAIR *	0.89614	0.3055		371*	
BLOCK	41.6456	22.76747	24.492	41.58	58.16
BIG5 *	0.80676	0.3953		334*	
AUD_SPEC *	0.57488	0.4950		238*	
ALOCKS	0.92512	1.4062	0	0	1
MINING *	0.22947	0.421		95*	
FINANCIAL *	0.16425	0.3710		68*	
UTILITIES *	0.03140	0.1746		13*	
Total Assets ^	3,294,113	24,547,582	51,206	154,633	690,306
Subsidiaries	28.9008	56.443	5	11	30
RESTRUCT *	0.07488	0.2635		31*	
NEWCEO *	0.03382	0.1810		14*	
NEWISSUE *	0.31401	0.4647		130*	
NEGROI	-0.05762	0.1852	0	0	0
LEVERAGE	0.49596	1.4758	0.0013	0.1826	0.4992
NAS_SPEC *	0.56280	0.4966		233*	
US_LIST *	0.08937	0.2856		37*	
US_SUB *	0.27295	0.4460		113*	
YEAR1 *	0.16425	0.3710		68*	
AIP/GO	0.88627	0.7789	0.5022	0.8294	1.0552

* dichotomous variables expressed as the sum instead of median
^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Table 6 Descriptive statistics

Panel F: Mean comparison for the 4-years pooled sample and well as for each of the 4 years

	1999-2002	2002	2001	2000	1999
n	1602	414	401	387	400
Audit ^	377.4783	402.350	389.573	353.863	362.46
APNAS ^	566.7654	503.589	672.278	639.679	455.83
APNAS/TFEE	0.411346	0.41608	0.42193	0.42737	0.3803
B_SIZE	6.265918	6.19807	6.20449	6.32558	6.34
B_DSHIPS	1.638874	1.59199	1.60981	1.65030	1.7055
B_MEET	10.57526	10.7744	10.3848	10.6930	10.446
B_FINLIT	0.442357	0.44795	0.43760	0.45278	0.4313
B_OUTSIDE	0.622504	0.63361	0.627	0.60688	0.6216
B_CHAIR	2.857054	0.74155	0.69825	0.67959	0.69
AC	0.702871	0.91546	0.91272	0.90698	0.925
A_SIZE	0.915106	2.82609	2.88529	2.86047	2.8575
A_MSHIP	1.361292	1.34661	1.33561	1.33899	1.4238
A_MEET	2.861472	2.91116	2.72750	2.87137	2.9348
A_FINLIT	0.490075	0.50589	0.48197	0.48432	0.4874
A_OUTSIDE	0.687254	0.71556	0.69019	0.64734	0.6936
A_CHAIR	0.870162	0.89614	0.87781	0.83721	0.8675
BLOCK	41.51788	41.6456	41.4643	41.6916	41.271
BIG5	0.798377	0.80676	0.80050	0.80362	0.7825
AUD_SPEC	0.501873	0.57488	0.52619	0.48837	0.415
ALOCKS	0.954432	0.92512	0.86284	0.94832	1.0825
MINING	0.190387	0.22947	0.16708	0.16538	0.1975
FINANCIAL	0.149189	0.16425	0.13217	0.14729	0.1525
UTILITIES	0.055556	0.03140	0.06733	0.06718	0.0575
Total Assets ^	3616336	3,294,113	4,130,311	3,861,449	3,197,430
Subsidiaries	29.98002	28.9008	32.5811	30.8889	27.61
RESTRUCT	0.131086	0.07488	0.05985	0.23256	0.1625
NEWCEO	0.089263	0.03382	0.13217	0.13437	0.06
NEWISSUE	0.262797	0.31401	0.22943	0.27907	0.2275
NEGROI	-0.51628	-0.05762	-0.47564	-0.0641	-1.4692
LEVERAGE	1.317706	0.49596	0.64964	0.74963	3.3876
NAS_SPEC	0.499376	0.56280	0.47631	0.48320	0.4725
US_LIST	0.087391	0.08937	0.08978	0.08786	0.0825
US_SUB	0.272784	0.27295	0.29177	0.28165	0.245
YEAR1	0.064295	0.16425	0.02993	0.02326	0.035
AIP/GO	0.944059	0.88627	0.92199	1.02415	0.9485

^ The means of these variables are expressed at ($'000)

Where:

Audit	=	Audit fee ($'000)
APNAS	=	Auditor's remuneration for services other than audit ($'000)
APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIP	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	Number of members in the audit committee
AC	=	1 if the company has an audit committee; 0 otherwise
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
Total Assets	=	total assets ($'000)
Subsidiaries	=	the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

The mean ratio of audit fee to total fee for the 4-year pooled sample was 41%. This is slightly lower than prior studies. Houghton and Ikin (2001) reported 54.4% in 1999 for the top 1,000 Australian firms, whereas the mean for 1999 for the 400 firms in my

sample were only 38%. This means that the sample used in this study are generally buying less APNAS relative to total fee compared with other top 1000 firms. This could mean that the firms in this sample are generally more conservative in buying NAS from their auditors. It is also possible that the sample firms have a lower ex ante demand for NAS which may weaken the results of the tests. The ratio is also lower than American findings, which Frankel et al. (2002) reports as 49% for American firms in 2001.

The means for the four years 1999 to 2002 were respectively 38.0%; 42.7%; 42.2%; 41.6%. This suggests an increase, followed by a levelling off during 2000-2001 and a decrease which is consistent with the events of the sample period.

The means for the pooled four-year sample return a board that meets 10.6 time annually, is made up of 6 directors, of which 63% are outsiders and of which 62% is chaired by an outsider. The outside directors hold on average 1.64 directorships and with 44% being identified as financially literate. The means of the four years are fairly similar except that for 2002, the percentage of firms that had an outside chair is higher at 74%.

In the four years 1999-2002, 92% of the firms in the sample have a separate audit committee, which meets on average 2.9 times annually. The mean number of members is 2.9, of which 69% are outsiders and on average 87% are chaired by an outside chairman. The outside members of the audit committee hold on average 1.36 audit committee memberships with 49% of them being identified as financially literate. The means for the test variables seem fairly stable over the four years.

The means for total assets for each of the years are greater than even their 3rd quartiles and they all have large standard deviations. This is due to the sample being heavily loaded with firms on the high end being significantly larger than the smaller ones.

As expected due possibly to the Y2K problem, the incidences of restructure for the year 2000 is significantly higher than the rest of the years. About 23% of firms are recorded as having restructuring expenses in that year. It is possible that some of these restructuring costs were also spent in the year before with 1999 recording the second highest percentage at 16%, still significantly higher than that of 2001 at 6% and 2002 at 7%.

With the integration of Andersen Australia and Ernst and Young in 2002, it is also unexpected that there is a high number of auditor changes in that year. 68 firms were recorded as having changed their auditor, of which 44 firms were identified as having Arthur Andersen as an auditor in 2001.

Table 7 documents the Pearson correlation between the variables for the 1999-2002 pooled sample. The correlations among several of the variables, in particular the test variables are significant giving rise to possible concerns regarding the presence of high multicollinearity. The Pearson correlations for the individual years of 1999-2002 are presented in appendix A1.1.

Table 7 Pearson correlation coefficients

Panel A: Pearson correlation coefficients between variables for the 4-year pooled sample

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR
Audit	1.000														
APNAS	0.770 0.000	1.000													
NAS_TFEE	0.118 0.000	0.297 0.000	1.000												
B_SIZE	0.431 0.000	0.386 0.000	0.259 0.000	1.000											
B_DSHIP	0.157 0.000	0.142 0.000	0.011 0.648	0.121 0.000	1.000										
B_MEET	0.005 0.828	0.020 0.428	0.133 0.000	-0.030 0.225	-0.033 0.191	1.000									
B_FINLIT	0.052 0.039	0.046 0.067	-0.014 0.576	0.019 0.456	0.042 0.091	0.028 0.255	1.000								
B_OUTSIDE	0.084 0.001	0.093 0.000	0.082 0.001	0.173 0.000	0.243 0.000	0.006 0.815	0.037 0.136	1.000							
B_CHAIR	0.025 0.327	0.022 0.386	0.058 0.021	0.053 0.035	0.046 0.065	0.065 0.009	-0.003 0.894	0.506 0.000	1.000						
AC_SIZE	0.191 0.000	0.169 0.000	0.102 0.000	0.412 0.000	0.115 0.000	0.121 0.000	0.016 0.531	0.132 0.000	0.116 0.000	1.000					
A_MSHIP	0.118 0.000	0.103 0.000	0.043 0.084	0.150 0.000	0.678 0.000	0.037 0.142	-0.047 0.062	0.150 0.000	0.047 0.062	0.308 0.000	1.000				
A_MEET	0.241 0.000	0.190 0.000	0.113 0.000	0.350 0.000	0.143 0.000	0.202 0.000	0.035 0.158	0.127 0.000	0.079 0.002	0.398 0.000	0.274 0.000	1.000			
A_FINLIT	0.030 0.230	0.033 0.185	0.038 0.126	0.135 0.000	-0.014 0.564	0.097 0.000	0.601 0.000	0.052 0.039	0.054 0.030	0.222 0.000	0.179 0.000	0.213 0.000	1.000		
A_OUTSIDE	0.136 0.000	0.122 0.000	0.108 0.000	0.252 0.000	0.142 0.000	0.068 0.006	0.027 0.289	0.532 0.000	0.309 0.000	0.383 0.000	0.375 0.000	0.342 0.000	0.312 0.000	1.000	
A_CHAIR	0.033 0.181	0.036 0.148	0.027 0.273	0.086 0.001	0.015 0.559	-0.032 0.207	-0.028 0.260	0.413 0.000	0.310 0.000	-0.039 0.121	-0.089 0.000	-0.044 0.079	-0.045 0.073	0.347 0.000	1.000
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 7 Pearson correlation coefficients

Panel A: Pearson correlation coefficients between variables for the 4-year pooled sample (continued)

	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR	
BLOCK	-0.033	-0.014	-0.024	0.015	-0.052	-0.207	-0.058	-0.127	-0.081	-0.005	0.010	-0.040	-0.016	-0.041	-0.076	BLOCK
	0.192	0.587	0.339	0.552	0.039	0.000	0.021	0.000	0.001	0.833	0.702	0.108	0.516	0.097	0.002	
BIG5	0.147	0.133	0.283	0.253	0.051	-0.013	-0.028	0.102	0.024	0.104	0.027	0.100	0.022	0.089	-0.014	BIG5
	0.000	0.000	0.000	0.000	0.042	0.605	0.270	0.000	0.339	0.000	0.289	0.000	0.373	0.000	0.587	
AUD_SPEC	0.196	0.171	0.206	0.204	0.073	-0.019	-0.021	0.090	0.049	0.082	0.050	0.122	0.002	0.098	0.027	AUD_SPEC
	0.000	0.000	0.000	0.000	0.003	0.453	0.405	0.000	0.050	0.001	0.046	0.000	0.944	0.000	0.272	
ALOCKS	0.234	0.241	0.136	0.318	0.625	-0.015	0.032	0.186	-0.016	0.151	0.418	0.221	0.012	0.107	-0.032	ALOCKS
	0.000	0.000	0.000	0.000	0.000	0.544	0.195	0.000	0.527	0.000	0.000	0.000	0.621	0.000	0.207	
Total assets	0.574	0.524	0.263	0.606	0.290	0.049	0.105	0.188	0.063	0.369	0.235	0.398	0.144	0.242	0.013	Total assets
	0.000	0.000	0.000	0.000	0.000	0.052	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.595	
Subsidiaries	0.438	0.352	0.197	0.488	0.123	0.072	0.060	0.090	0.035	0.309	0.181	0.295	0.153	0.223	0.004	Subsidiaries
	0.000	0.000	0.000	0.000	0.000	0.004	0.016	0.000	0.160	0.000	0.000	0.000	0.000	0.000	0.888	
RESTRUCT	0.134	0.178	0.145	0.189	0.040	0.070	0.080	0.051	0.066	0.110	0.035	0.061	0.095	0.067	0.007	RESTRUCT
	0.000	0.000	0.000	0.000	0.106	0.005	0.001	0.041	0.008	0.000	0.156	0.015	0.000	0.008	0.781	
NEWCEO	0.015	0.023	0.098	0.081	-0.004	0.022	0.003	0.010	-0.022	0.067	0.021	0.050	0.005	0.050	0.010	NEWCEO
	0.554	0.353	0.000	0.001	0.887	0.375	0.917	0.694	0.387	0.007	0.405	0.044	0.849	0.045	0.683	
NEWISSUE	-0.039	-0.025	0.061	-0.075	-0.055	0.053	-0.032	-0.041	0.000	-0.058	-0.030	-0.098	-0.051	-0.063	0.028	NEWISSUE
	0.120	0.315	0.015	0.003	0.027	0.033	0.200	0.101	0.991	0.019	0.227	0.000	0.043	0.011	0.261	
NEGROI	0.016	0.013	0.005	0.038	0.041	-0.003	0.057	0.025	0.048	0.084	0.058	0.057	0.061	0.060	-0.016	NEGROI
	0.531	0.609	0.852	0.131	0.099	0.911	0.022	0.325	0.053	0.001	0.020	0.023	0.014	0.016	0.514	
LEVERAGE	0.005	0.009	-0.009	0.040	0.017	-0.019	-0.010	0.028	0.021	0.029	-0.005	0.001	0.018	0.013	0.015	LEVERAGE
	0.828	0.728	0.724	0.106	0.485	0.440	0.689	0.260	0.409	0.242	0.836	0.964	0.483	0.591	0.542	
NAS_SPEC	0.184	0.200	0.254	0.195	0.091	0.019	-0.024	0.122	0.078	0.044	0.063	0.106	0.007	0.102	0.048	NAS_SPEC
	0.000	0.000	0.000	0.000	0.000	0.443	0.342	0.000	0.002	0.077	0.012	0.000	0.793	0.000	0.056	
US_LIST	0.318	0.306	0.101	0.199	0.094	0.014	-0.045	0.069	-0.016	0.078	0.047	0.113	-0.043	0.076	0.087	US_LIST
	0.000	0.000	0.000	0.000	0.000	0.584	0.073	0.006	0.510	0.002	0.062	0.000	0.086	0.002	0.001	
US_SUB	0.317	0.259	0.125	0.204	0.097	0.020	0.015	0.010	-0.028	0.133	0.108	0.133	0.077	0.083	-0.014	US_SUB
	0.000	0.000	0.000	0.000	0.000	0.418	0.550	0.675	0.261	0.000	0.000	0.000	0.002	0.001	0.587	
YEAR1	0.002	-0.026	-0.039	0.001	-0.022	-0.005	0.008	0.018	0.009	-0.014	0.000	0.025	0.035	0.043	0.063	YEAR1
	0.936	0.293	0.119	0.976	0.386	0.827	0.750	0.473	0.721	0.563	0.999	0.322	0.164	0.082	0.011	
AIP/GO	0.122	0.105	0.021	0.026	-0.023	0.033	0.041	0.038	0.016	-0.031	-0.052	0.038	-0.003	-0.014	0.009	AIP/GO
	0.000	0.000	0.409	0.305	0.366	0.190	0.097	0.131	0.511	0.214	0.038	0.133	0.899	0.583	0.722	
	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR	

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 7 Pearson correlation coefficients

Panel A: Pearson correlation coefficients between variables for the 4-year pooled sample (continued)

	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO
BLOCK	1.000															
BIG5	0.035 0.158	1.000														
AUD_SPEC	0.016 0.519	0.495 0.000	1.000													
ALOCKS	-0.067 0.007	0.211 0.000	0.215 0.000	1.000												
Total assets	-0.029 0.240	0.291 0.000	0.261 0.000	0.411 0.000	1.000											
Subsidiaries	-0.066 0.008	0.210 0.000	0.183 0.000	0.188 0.000	0.628 0.000	1.000										
RESTRUCT	-0.028 0.256	0.052 0.036	0.032 0.203	0.088 0.000	0.196 0.000	0.191 0.000	1.000									
NEWCEO	-0.001 0.970	0.043 0.087	0.036 0.149	0.025 0.315	0.055 0.028	0.048 0.056	0.060 0.016	1.000								
NEWISSUE	-0.017 0.508	-0.043 0.087	-0.012 0.627	-0.053 0.034	-0.107 0.000	-0.074 0.003	0.003 0.891	-0.023 0.362	1.000							
NEGROI	0.036 0.145	0.062 0.013	0.042 0.092	0.030 0.238	0.132 0.000	0.048 0.055	0.017 0.491	0.013 0.595	-0.012 0.620	1.000						
LEVERAGE	0.027 0.287	0.008 0.763	-0.023 0.357	0.007 0.768	0.027 0.281	0.031 0.214	0.007 0.783	0.074 0.003	-0.022 0.384	0.002 0.925	1.000					
NAS_SPEC	-0.028 0.266	0.496 0.000	0.653 0.000	0.214 0.000	0.238 0.000	0.144 0.000	0.071 0.005	0.055 0.027	-0.026 0.295	0.042 0.095	0.027 0.278	1.000				
US_LIST	-0.051 0.043	0.089 0.000	0.145 0.000	0.206 0.000	0.270 0.000	0.214 0.000	0.063 0.011	-0.004 0.878	0.006 0.808	-0.041 0.097	-0.001 0.965	0.151 0.000	1.000			
US_SUB	-0.086 0.001	0.130 0.000	0.128 0.000	0.169 0.000	0.271 0.000	0.399 0.000	0.069 0.005	0.029 0.239	-0.003 0.915	0.026 0.295	0.040 0.106	0.109 0.000	0.272 0.000	1.000		
YEAR1	0.038 0.133	0.056 0.026	0.042 0.091	-0.025 0.312	-0.013 0.592	0.018 0.483	-0.019 0.450	-0.002 0.945	0.005 0.829	0.011 0.671	0.009 0.705	0.033 0.181	-0.009 0.718	-0.012 0.632	1.000	
AIP/GO	-0.029 0.238	0.037 0.138	0.022 0.380	0.023 0.357	0.222 0.000	0.058 0.020	0.020 0.433	0.044 0.076	-0.095 0.000	0.041 0.100	0.000 0.999	0.032 0.198	-0.024 0.339	-0.045 0.071	-0.034 0.170	1.000
	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO

Cell contents are the Pearson correlation coefficients followed by significance levels.

Where:

Audit	=	Audit fee ($'000)
APNAS	=	Auditor's remuneration for services other than audit ($'000)
APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIP	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	Number of members in the audit committee
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
Total Assets	=	total assets ($'000)
Subsidiaries	=	the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise
AIP/GO	=	accounting book value of total assets divided by the market value of common equity plus book value of total debt and preferred stock.

5.4 Base Model Testing for the 4 years pooled sample 1999-2002

The results of the regression analysis of the base model on the four years pooled sample 1999–2002 is reported in Table 8. The model itself is significant (F = 12.695, p = .000) however the explanatory power of the model is modest at 18%.[29] A possible explanation for this is that the full sample contains firms that behave significantly different in their purchase of APNAS or that simply the control variables does not adequately map the variation in APNAS/TFEE.

Further testing below was conducted on sub-samples based on several criteria supports this to a certain extent in the changes in significance among the explanatory variables, however, none of the models achieved a high explanatory power either.

The residuals of the regression appear to be normally distributed. The probability plot of the regression's standardized residuals and its histogram can be found in appendix A1.2.

As pointed out above, the high number of correlated independent variables led to concerns about the presence of multicollinearity. To investigate this, auxiliary regressions were estimated where each of the test variables were regressed against the

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[29] The low adjusted R^2 is comparable to the ones in Abbott et al. (2003) when they regressed the same independent variable against audit committee characteristics and other control variables. Their adjusted R^2 was 17.4% for the full sample, and 14.9% in a sub-sample of smaller firms and 9.3% in the sub-sample of larger firms. The same composite audit committee variable that was used in their study is also replicated later in section 5.9.

However, in their study, they used an different dependent variable, using audit fee as the denominator instead of total fee. The same variable was used to re-estimate the regression resulting in a much lower adjusted R^2 (of 9.7%) and lost of significance in the coefficient of B_DSHIP. Full regression results are in appendix A2.1.

Also, Krishnan, Sami and Zhang (2005) used a fee model to estimate the ratio of APNAS to total fee and obtained an adjusted R^2 of 25.3%

rest of the variables. All regression had significant F statistic and most had an adjusted R^2 larger than that of the base model of 19.3%. This suggests that there might be a multicollinearity problem.

Also, the conditional index obtained by the square root of the maximum eigenvalue divided by the minimum eigen value is 57.26, which is also indicative of severe multicollinearity. This means that the coefficients of the variables will tend to be insignificant.

Besides APNAS/TFEE, two other alternative dependent variables were used. APNAS/audit fee as well as the natural log of APNAS. As noted above, their results are reported in Appendix 2.1. APNAS/TFEE produced better results compared to APNAS/AFEE having both a higher adjusted R^2 and more significant test variables. Although LnAPNAS provided the largest adjusted R^2 among the three regressions, it produced less significance among the test variables with more of the explanatory power coming from the size variable (which has in effect moved from the left to the right side of the equation).

Given the significant correlations between the board and audit committee members, additional testing was done where one set of variables was removed from the model. The results of these tests are reported below in section 5.8.

Table 8 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the Four Years 1999-2002 Pooled Sample

$$APNAS/TFEE = \alpha + \beta_1 B\_SIZE + \beta_2 B\_DSHIPS + \beta_3 B\_MEET + \beta_4 B\_FINLIT + \beta_5 B\_OUTSIDE + \beta_6 B\_CHAIR + \beta_7 A\_SIZE + \beta_8 A\_MSHIP + \beta_9 A\_MEET + \beta_{10} A\_FINLIT + \beta_{11} A\_OUTSIDE + \beta_{12} A\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		0.0010	0.015	0.988
Board of Directors Variables				
B_SIZE	+	0.0140	3.560	**0.000**
B_DSHIP	-	-0.0400	-2.662	**0.004**
B_MEET	-	0.0080	5.179	**0.000**
B_FINLIT	-	-0.0550	-1.590	**0.056**
B_OUTSIDE	-	-0.0050	-0.139	0.445
B_CHAIR	-	0.0180	1.201	0.115
Audit Committee Variables				
A_SIZE	-	-0.0110	-1.957	**0.026**
A_MSHIP	-	0.0130	1.148	0.126
A_MEET	-	-0.0040	-1.098	0.136
A_FINLIT	-	0.0001	0.003	0.499
A_OUTSIDE	-	0.0220	0.890	0.187
A_CHAIR	-	0.0010	0.072	0.472
Control Variables				
BLOCK	-	0.0000	0.881	0.189
BIG5	+	0.0990	5.595	**0.000**
AUD_SPEC #	?	-0.0030	-0.171	0.865
ALOCKS	+	0.0070	1.267	0.103
MINING	-	-0.0460	-2.910	**0.002**
FINANCIAL	-	0.0400	2.069	**0.020**
UTILITIES	-	0.0580	2.237	**0.013**
ASSETS	+	0.0150	2.940	**0.002**
ALLSUBS	+	0.0020	0.320	0.375
RESTRUCT	+	0.0530	3.043	**0.001**
NEWCEO	+	0.0600	2.953	**0.002**
NEWISSUE	+	0.0420	3.193	**0.001**
NEGROI	-	-0.0010	-1.050	0.147
LEVERAGE	-	0.0000	-0.805	0.211
NAS_SPEC	+	0.0610	3.882	**0.000**
US_LIST	-	0.0100	0.466	0.321
US_SUB	-	0.0230	1.599	0.055
YEAR1 #	?	-0.0570	-2.425	**0.015**
	Adjusted R^2		.180	
	F statistic		12.695	
	(significance)		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

5.4.1 Board of directors variables

The coefficient of B_SIZE is positively significant (p = .000, one-tailed). This is in the predicted direction, that firms with larger boards tend to purchase more APNAS relative to total fee. This supports H1.1.

The coefficient of B_DSHIP is negatively significant (p = .004, one-tailed), which is also in the predicted direction, that firms with outside directors having a greater number of multiple directorships tend to purchase less APNAS relative to total fee. This supports H1.2.

However, the coefficient of B_MEET is positively significant (p = .000, two-tailed), whereas the theory predicts a negative relationship. This does not support H1.3. A possible explanation for this is that firms that have a high number of meetings might have a higher demand of NAS, either because it is undergoing a crisis, major change or simply that the type of firm that requires increased monitoring from directors also have a higher demand of NAS. Alternatively this could be due to the substitution hypothesis, where a firm substitute a weaker corporate governance mechanism (lower quality external audit) with a stronger one (a more diligent board) to maintain an equilibrium agency cost minimisation position. As the number of board meetings is the easiest to change among the board variables, it is possible that it is used to monitor APNAS spending which may fluctuate from year to year. The substitution hypothesis is investigated more fully in section 5.9.

The coefficient of B_FINLIT is negatively significant (p = .056, one-tailed). This is in the predicted direction, that firms with a board of directors that is made up of a

higher proportion of financially literate directors tend to purchase less APNAS relative to total fee. This supports H1.4.

The coefficients of B_OUTSIDE and B_CHAIR are both insignificant, not supporting H2.1 and H2.2. This suggests that the independence of the board as a whole was unrelated to the amount of APNAS purchased.

5.4.2 Audit committee variables

The coefficient of A_SIZE is negatively significant (p = .026, one-tailed). This is in the predicted direction, in which firms with larger audit committees tend to purchase less APNAS relative to total fee. This supports H3.1.[30]

However, the remaining audit committee coefficients of A_MSHIP, A_MEET, A_FINLIT, A_OUTSIDE, and A_CHAIR are all insignificant at the 10% level, finding no support for H3.2, H3.3, H3.4, H4.1 and H4.2.

In addition, the composite variable ACE (defined to be equal to 1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year; and 0 otherwise) was tested in a replication of the model used by Abbott et al. (2003) as well as in a more complete model. While it was found to be unexpectedly positive, it seems that it was mainly driven by audit committee meetings which was no longer significant after introducing the full set of test variables. A more complete discussion of the tests done is in section 5.5.

[30] An alternative variable was tried, using the ratio of the number of audit committee members to number of directors. The alternative variable produced the same results. The full regression result are in appendix A2.2

5.4.3 Summary of results for test variables

Table 9 summarises the results of the hypothesis testing for the 1999-2002 four years pooled sample.

Table 9 Summary of hypothesis testing result for the four years pooled sample

Hypothesis	Variable	Predicted sign	Supported?
Quality of the board of directors			
H1.1	B_SIZE	+	yes
H1.2	B_DSHIP	-	yes
H1.3	B_MEET	-	
H1.4	B_FINLIT	-	yes
Independence of the board of directors			
H2.1	B_OUTSIDE	-	
H2.2	B_CHAIR	-	
Quality of the audit committee			
H3.1	A_SIZE	-	yes
H3.2	A_MSHIP	-	
H3.3	A_MEET	-	
H3.4	A_FINLIT	-	
Independence of the audit committee			
H4.1	A_OUTSIDE	-	
H4.2	A_CHAIR	-	

Where:

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors

A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise

Overall, the results suggest that quality and financial literacy of the board of directors acts as an effective monitor of audit quality and leads to less spending on APNAS.

Also, the size of the audit committee is negatively related to relative APNAS spending, in contrast to the positive relationship board size has with APNAS. While a larger board of directors is seen to be less effective, a large audit committee is seen to represent the firm allocating increased importance and resources to the audit function, leading to a greater monitoring on APNAS spending. This opposite relationship was observed in the results.

However, the financial literacy and the diligence of the audit committee does not seem to constrain APNAS purchases.

Surprisingly, the results suggest that independence of both the full board and the audit committee (as measured by the percentage of outsiders as well as the absence of an insider chair) has no relationship to the amount of APNAS being bought relative to total fee. One possible explanation for the lack of significance is that most of the governance by outside directors are provided by those with financial literacy and/or multiple directorships who might be mostly outsiders, especially those with multiple directorships.

It is also interesting to note that although the audit committee is delegated financial oversight responsibility, it is the board that produced the strongest association with relative APNAS spending rather than the audit committee.

However, due to the high correlation between the board and audit committee variables, further testing is done in section 5.8 where the regression is estimated using only one of the two sets of test variables at one time, either only the board variables, or the audit committee variables.

In addition, a number of supplementary tests were carried out. Firstly, in the regression, audit committee size was used as a measure of the amount of resources the company devote to the financial accounting process (Anderson et al. 2004). An alternate measure of this construct is to use the ratio of audit committee members to the number of directors in the full board. The regression results using this alternate measure produced qualitative similar results, with full results reported in appendix A2.2.

Also, as revealed by the descriptive statistics, the sample contains a small percentage of firms that are significantly larger than the small ones. A series of regressions shows that the results are sensitive to changes in the sample. They show that the significance of B_SIZE is largely concentrated on the samples with the larger firms, while that of B_FINLIT seems to be driven by the smaller firms. The positive significance of B_MEET is quite uniform throughout the various sub-samples though. Besides the test variables, the control variables also exhibit some instability across the different size sub-samples.

5.4.4 Control variables: Corporate governance variables

The coefficient for BLOCK is insignificant which suggests that shareholders with large amount of shares do not influence the purchase of APNAS relative to total fee. This is inconsistent with the results in Abbott et al. (2003) who used US firms and found a significantly negative relationship.

5.4.5 Control variables: Audit quality variables

As expected, the coefficient for BIG5 is positively significant (p = .000, one-tailed), that is firms with a top tier auditor buys more APNAS relative to total fee. This is consistent with the results in Krishnan et al. (2005). However, Abbott et al. (2003) found no relationship between a big 5 auditor and higher relative APNAS.

However the coefficient for ALOCKS is not significant, that firms which share the same director and auditor is not related to relative APNAS fee. It suggests that closer relationships between the auditors and directors may not necessarily affect the company's APNAS spending.

The coefficient for AUD_SPEC is also insignificant, indicating that auditor specialisation is not related to APNAS/TFEE. This suggests that the industry specialisation in auditing does not command a premium in APNAS. While it was expected that it would affect TFEE by increasing the audit fee, the difference does not seem to be not large enough to be significant.

5.4.6 Control variables: Industry variables

The coefficient for MINING is significantly negative (p = .002, one-tailed) and supports the prediction that the greater political costs in that industry might lead to constraints in APNAS spending.

On the other hand, the coefficient for UTILITIES is positively significant (p = .025, two-tailed) suggesting that utility firms tend to buy more APNAS which is unexpected and does not support that political cost theory. The last industry variable, FINANCIAL, was insignificant. A possible explanation is that the industry dummy variables picked up different ex-ante demand for APNAS in these industries (in comparison to other firms in the sample) rather than a political cost effect or that the demand effect overpowered a weaker political cost effect. This suggests that mining firms requires less APNAS while utility firms require more.

5.4.7 Control variables: Variables that proxy for the Auditee's ex ante need for NAS

The coefficient for ASSETS is significant (p = .002, one-tailed) supporting the theory that increased size places a greater demand on NAS. This was also found in Abbott et al. (2003) and Krishnan et al. (2005).

However, ALLSUBS which uses number of subsidiaries proxy the complexity of the firm by was insignificant.

One time events such as restructuring (p = .001, one-tailed), a change of CEO (p =.002, one-tailed) and issue of new shares (p = .001, one-tailed) were all significant and positive, suggesting a fair number of firms increase their demand for NAS for

short-term projects and do not mind purchasing these services from their incumbent auditors. This is not unexpected as these services are seen to have a lower impact on auditor independence compared to long term recurring services. Abbott et al. (2003) also found a significant positive relationship between restructuring and APNAS/TFEE but not for a change in CEO or issue of new shares.

Also the coefficient for NEGROI, meant to pick out firms that are performing badly is not significant. This might be due to poorly performing firms not having the cash flow to purchase large amounts of NAS.

5.4.8 Control variables: Other variables

Unlike AUD_SPEC, which was insignificant, the coefficient for NAS_SPEC is positively significant (p = .000, one-tailed). This might be because NAS_SPEC provides a better measurement of auditor specialisation in the industry in respect to NAS (or their greater willingness to supply NAS to their audit client) than AUD_SPEC.

The first year of an audit engagement is negatively related (p = .015, two-tailed), suggesting that on average, firms that change their auditor spend less on NAS with their new audit firm. This could be due to a lag in NAS contracts that last beyond the change in auditor. This would suggest that firms on average spend more NAS with their exiting auditor compared to their incoming auditor. It could also be due to audit firms using an audit engagement to introduce NAS to their clients, hence the low spending in the first year, with increased spending in subsequent years.

LEVERAGE was insignificant. This was unexpected as leverage was expected to increase agency costs and reduce APNAS/TFEE. While this is consistent with the findings of Abbott et al. (2003), Krishnan et al. (2005) on the other hand did find a negative relationship.

US_SUB and US_LIST are both insignificant as well, which together suggest that the NAS debate in USA did not significantly influence the purchasing decisions regarding NAS for Australian firms who list or have subsidiaries in the US.

5.5 Replication of Abbott et al. (2003)

To investigate the association between audit committee characteristics and APNAS, Abbott et al. (2003) used a similar model to the one used in this study, and found that the composite audit committee variable used in that study was significantly and negatively related to the ratio of APNAS to audit fee.

The composite audit committee variable was defined to be equal to 1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year; and 0 otherwise.

The regression model used in Abbott et al. (2003) is replicated using the Australian pooled data from the years 1999-2002 with a few differences. Three of the control variables used in that study was not used, INOWN, defined as the cumulative percentage of voting control held by managers and directors; ACQ, defined as the number of acquisitions made by the company during the year or in the previous two

years; and RETURN, defined as the fiscal 1999 total stock return less adjustments for the 1999 S&P 500 return.

The variable RETURN measures the company's performance to capture possible increased demand for NAS a poorly performing company might have. To replace that variable, NEGROI, is used which proxies for the same construct.

The result of the regression is reported in Table 10 below. The regression is significant ($F = 12.004$, $p = .000$). But its explanatory power is much lower, at 5.8% compared to 17.4% which was found in Abbott et al. (2003).

Table 10 Regression results: The Ratio of Auditor provided Non-Audit Services to Audit Fee Regressed on a Abbott et al. (2003)'s Composite Audit Committee and Control Variables for the Four Years 1999-2002 Pooled Sample

$$APNAS/AFEE = \alpha + + \beta_1 BLOCK + \beta_2 LEVERAGE + \beta_3 NEGROI + \beta_4 ASSETS + \beta_5 BIG5 + \beta_6 NEWISSUE + \beta_7 NEWCEO + \beta_8 RESTRUCT + \beta_9 ACE + \varepsilon$$

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		-.817	-2.252	**.024**
BLOCK	-	.003	1.276	.101
LEVERAGE	-	-.002	-.753	.226
NEGROI	-	-.002	-.514	.304
ASSETS	+	.104	3.508	**.000**
BIG5	+	.600	4.578	**.000**
NEWISSUE	+	.192	1.670	**.043**
NEWCEO	+	.514	2.901	**.002**
RESTRUCT	+	.756	4.977	**.000**
ACE	-	.171	1.403	**.081**
	Adjusted R^2		.058	
	F statistic		12.004	
	(significance)		.000	

p-values are 1 tailed except for the constant which is 2-tailed

Where:

APNAS/AFEE	=	non-audit fees / audit fees
BLOCK	=	% owned by blockholders
LEVERAGE	=	long term debt to shareholder's equity
NEGROI	=	two-year average ROI if negative, =0 otherwise
ASSETS	=	natural log of total assets
BIG5	=	1 if auditor is Big 5, 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
ACE	=	1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year and 0 otherwise.

Unexpectedly, the composite ACE variable although significant (p = .015. two tailed), was positive, which is opposite to what Abbott et al. (2003) found in the US.

Abbott et al. (2003) also found large blockholders lead to lower levels of APNAS bought relative to the audit fee, but that result was not found in the Australian data.

In both studies, the size of the firm, measured as the natural log of total assets, and the presences of restructuring during the year has lead to relative increased levels of APNAS bought. In the Australian data, in addition to that, increased levels of APNAS was also related to the audit firm being a big 5 firm, and in the event of a new issue of stocks or change of CEO.

In the regression Abbott et al. (2003) used, the dependent variables was the ratio of total non-audit fees to audit fees, as opposed to total fees which was used in this study. Table 11 shows the result of the same regression but using APNAS/TFEE as the dependent variable. The results are more robust and show a highly positively significant coefficient for ACE (p = .004, two-tailed) and the same control variables. In addition, NEGROI is also significant (p = .072, one-tailed) relating poor company performance to higher relative APNAS spending.

Table 11 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on a Abbott et al. (2003)'s Composite Audit Committee and Control Variables for the Four Years 1999-2002 Pooled Sample

$$APNAS/TFEE = \alpha + + \beta_1 BLOCK + \beta_2 LEVERAGE + \beta_3 NEGROI + \beta_4 ASSETS + \beta_5 BIG5 + \beta_6 NEWISSUE + \beta_7 NEWCEO + \beta_8 RESTRUCT + \beta_9 ACE + \varepsilon$$

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		-.009	-.212	.832
BLOCK	-	.000	-.796	.213
LEVERAGE	-	.000	-.794	.214
NEGROI	-	-.001	-1.458	**.072**
ASSETS	+	.023	6.573	**.000**
BIG5	+	.140	9.202	**.000**
NEWISSUE	+	.054	4.024	**.000**
NEWCEO	+	.064	3.107	**.002**
RESTRUCT	+	.067	3.808	**.000**
ACE	-	.041	2.909	**.004**
	Adjusted R^2		.140	
	F statistic		30.043	
	(significance)		.000	

p-values are 1 tailed except for the constant which is 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
BLOCK	=	% owned by blockholders
LEVERAGE	=	long term debt to shareholder's equity
NEGROI	=	two-year average ROI if negative, =0 otherwise
ASSETS	=	natural log of total assets
BIG5	=	1 if auditor is Big 5, 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
ACE	=	1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year and 0 otherwise.

The model is next expanded with the full list of control variables that was used in this study and then in a separate regression, all the board and audit committee variables (except for those for audit committee meetings and percentage of outsides on the audit committee, which are already incorporated in the ACE variable) are also added to the model. These regressions are done with both dependent variables, APNAS/AFEE and APNAS/TFEE. The results are reported in Table 12 below.

Table 12 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board, Audit Committee, Abbott et al. (2003)'s Composite Audit Committee and Control Variables for the Four Years 1999-2002 Pooled Sample

	Predicted Sign	Dependent variable APNAS/AFEE				Dependent variable APNAS/TFEE			
		Estimate	p#	Estimate	p#	Estimate	p#	Estimate	p#
(Constant)#		-0.812	**.048**	-0.784	**.106**	.043	.373	0.024	.665
Board of Directors Variables									
B_SIZE	+			0.080	**.007**			0.013	**.000**
B_DSHIP	-			-0.105	.207			-0.041	**.003**
B_MEET	-			0.036	**.002**			0.007	**.000**
B_FINLIT	-			-0.375	.104			-0.055	**.056**
B_OUTSIDE	-			0.010	.487			-0.006	.426
B_CHAIR	-			0.180	**.082**			0.017	.133
Audit Committee Variables									
A_SIZE	-			-0.063	**.088**			-0.010	**.032**
A_MSHIP	-			0.050	.292			0.014	**.098**
A_FINLIT	-			0.269	**.096**			0.000	.493
A_CHAIR	-			-0.342	**.022**			0.005	.403
ACE	-	0.136	.131	0.085	.261	.037	**.004**	0.025	.050
Control Variables									
BLOCK	-	0.003	**.069**	0.004	**.033**	.000	.480	0.000	.201
BIG5	+	0.300	**.024**	0.270	**.038**	.104	**.000**	0.099	**.000**
AUD_SPEC#	?	-0.176	.199	-0.158	.246	-.004	.784	-0.003	.853
ALOCKS	+	-0.025	.264	-0.012	.403	-.002	.325	0.006	.133
MINING	-	-0.121	.182	-0.090	.254	-.044	**.002**	-0.046	**.002**
FINANCIAL	-	0.174	.131	0.294	**.038**	.018	.164	0.040	**.018**
UTILITIES	-	1.212	**.000**	1.192	**.000**	.065	**.006**	0.057	**.014**
ASSETS	+	0.110	**.003**	0.077	**.035**	.017	**.000**	0.013	**.004**
ALLSUBS	+	-0.048	.167	-0.068	**.086**	.004	.223	0.002	.392
RESTRUCT	+	0.769	**.000**	0.713	**.000**	.062	**.000**	0.054	**.001**
NEWCEO	+	0.486	**.003**	0.488	**.003**	.061	**.001**	0.058	**.002**
NEWISSUE	+	0.144	.103	0.129	.128	.050	**.000**	0.044	**.000**
NEGROI	-	-0.002	.301	-0.002	.330	-.001	**.094**	-0.001	.154
LEVERAGE	-	-0.002	.199	-0.002	.194	.000	.209	0.000	.224
NAS_SPEC	+	0.639	**.000**	0.611	**.000**	.066	**.000**	0.061	**.000**
US_LIST	-	0.133	.243	0.177	.177	.014	.266	0.010	.326
US_SUB	-	0.041	.371	0.052	.338	.019	.100	0.023	**.058**
YEAR1#	?	-0.382	**.060**	-0.366	**.071**	-.058	**.000**	-0.059	**.012**
Adj R^2		.087		.095		.159		.181	
F statistic		9.062		6.824		16.945		13.183	
(significance)		.000		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which is 2-tailed

Where:

APNAS/AFEE = non-audit fees / audit fees
APNAS/TFEE = non-audit fees / total fees
B_SIZE = number of board members
B_DSHIPS = average number of directorships by outside directors on the board

B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
ACE	=	1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year and 0 otherwise.
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

The ACE variable coefficient remained significant and positive after all the control variables are added in when the APNAS was scaled to TFEE but not AFEE(p = .262, when APNAS/AFEE was the dependent variable and p = .009, when it was APNAS/TFEE, both two-tailed). They lose a lot of significance when estimated together with the other board and audit committee variables (p = .522 and .100, two-tailed).

The regression with all the board and audit committee variables also produced the similiar significant test variables when compared to the results when the original A_MEET and A_OUTSIDE variables were used instead of ACE. And the insignificance of ACE was consistent with the same result for A_MEET and A_OUTSIDE. This suggests that, at least for this sample, the relationship between the ACE variable and relative APNAS spending is largely overshadowed by other variables.

Finally, the ACE variable was broken up into its components, and the above regression is re-estimated. The two variables are D_MEET, defined as equal to 1 if the audit committee meets at least four times during the year and 0 otherwise; and D_OUTSIDE, defined as equal to 1 if the audit committee is comprised entirely of independent directors and 0 otherwise. The results of the regression are reported in Table 13 below.

Table 13 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board, Audit Committee, and Control Variables for the Four Years 1999-2002 Pooled Sample

	Predicted	Dependent variable APNAS/AFEE				Dependent variable APNAS/TFEE			
	Sign	Estimate	p#	Estimate	p#	Estimate	p#	Estimate	p#
(Constant)#		-0.750	**.069**	-0.727	.133	0.040	.404	0.021	.702
Board of Directors Variables									
B_SIZE	+			0.079	**.008**			0.013	**.000**
B_DSHIP	-			-0.094	.235			-0.039	**.004**
B_MEET	-			0.034	**.003**			0.007	**.000**
B_FINLIT	-			-0.362	.113			-0.053	**.063**
B_OUTSIDE	-			-0.025	.468			-0.011	.379
B_CHAIR	-			0.177	.085			0.017	.131
Audit Committee Variables									
A_SIZE	-			-0.063	**.090**			-0.010	**.035**
A_MSHIP	-			0.037	.348			0.012	.145
A_FINLIT	-			0.244	.122			-0.004	.441
A_CHAIR	-			-0.347	**.022**			0.003	.444
D_MEET	-	0.213	**.026**	0.109	.167	0.024	**.029**	0.010	.233
D_OUTSIDE	-	0.069	.251	0.078	.265	0.022	**.031**	0.020	.083
Control Variables									
BLOCK	-	0.003	**.061**	0.004	**.032**	0.000	.486	0.000	.187
BIG5	+	0.300	**.024**	0.271	**.037**	0.105	**.000**	0.100	**.000**
AUD_SPEC#	?	-0.179	.189	-0.162	.236	-0.005	.751	-0.003	.827
ALOCKS	+	-0.029	.231	-0.014	.389	-0.002	.327	0.006	.128
MINING	-	-0.124	.176	-0.095	.244	-0.045	**.002**	-0.046	**.002**
FINANCIAL	-	0.177	.127	0.292	**.039**	0.018	.166	0.039	**.020**
UTILITIES	-	1.204	**.000**	1.189	**.000**	0.065	**.006**	0.058	**.013**
ASSETS	+	0.098	**.008**	0.072	**.046**	0.016	**.000**	0.013	**.004**
ALLSUBS	+	-0.052	.148	-0.070	**.082**	0.004	.240	0.002	.396
RESTRUCT	+	0.774	**.000**	0.717	**.000**	0.062	**.000**	0.055	**.001**
NEWCEO	+	0.487	**.003**	0.489	**.003**	0.062	**.001**	0.059	**.002**
NEWISSUE	+	0.156	**.086**	0.136	.117	0.051	**.000**	0.044	**.000**
NEGROI	-	-0.002	.301	-0.002	.333	-0.001	**.090**	-0.001	.152
LEVERAGE	-	-0.002	.213	-0.002	.204	0.000	.225	0.000	.234
NAS_SPEC	+	0.641	**.000**	0.614	**.000**	0.067	**.000**	0.062	**.000**
US_LIST	-	0.130	.248	0.173	.184	0.014	.270	0.010	.333
US_SUB	-	0.044	.364	0.055	.331	0.019	**.092**	0.023	**.053**
YEAR1#	?	-0.396	**.051**	-0.373	**.066**	-0.059	**.013**	-0.059	**.012**
Adj R^2		.089		.095		.159		.180	
F statistic		8.789		6.631		16.152		12.732	
(significance)		.000		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which is 2-tailed

Where:

APNAS/AFEE = non-audit fees / audit fees
APNAS/TFEE = non-audit fees / total fees
B_SIZE = number of board members
B_DSHIPS = average number of directorships by outside directors on the board
B_MEET = sum of the total number of board meetings attended by each director divided by the number of directors

B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
D_MEET	=	1 if the audit committee meets at least four times during the year and 0 otherwise.
D_OUTSIDE	=	1 if the audit committee is comprised entirely of independent directors and 0 otherwise.
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

Among the two dummy variables, D_MEET and D_OUTSIDE, only D_MEET was significant in both the APNAS/AFEE and APNAS/TFEE regressions (p = .052 and .059, two-tailed) suggesting that the positive significance of the composite ACE variable was largely driven by the audit committee meetings component of the variable. This is in contrast to Abbott et al.'s (2003) findings where it was the D_OUTSIDE component of the variable that was significant and D_MEET being

insignificant. Although when APNAS was scaled against total fees, D_OUTSIDE was also significant (p = .062, two-tailed).

However, when the two dummy variables were regressed together with all the other board and audit committee variables, they were insignificant as was the case when they were combined into one composite variable.

It is possible that the positive relationship of the ACE variable could be explained by the stronger positive relationship between B_MEET and APNAS/TFEE which is highly correlated with A_MEET.

The composite variable ACE (and control variables) was also regressed against APNAS/AFEE for each of the four years 1999-2002. The results show that ACE was only significant for the year 2000 and seems to confirm the fact that particular year produces the strongest relationship between the test variables and relative APNAS spending. Full results of the regression are reported in appendix A2.8.

These results shows that the results found in Abbott et al. (2003) should not be generalised to the Australian context during the time frame of this study at the least. Also it suggests that further testing on US data should be conducted including variables that control for variation in board quality as well as other aspects of the audit committee not controlled for in their study.

5.6 Base Model Testing for 2002 and comparison to 1999-2001

To investigate if the events of 2001 caused a change in the relationship between APNAS/TFEE, the base model was estimated for 2002 and the result compared against those from the pooled sample of the three prior years. The results of the regression analysis of the base model are reported in Table 14.

Both models are significant (F = 10.490, p = .000 for the 1999-2001 pooled sample; F = 3.382, p = .000 for 2002) however the explanatory power of the 2002 model is 14.8% which is substantially lower than the three year pooled regression (19.3). [31]

The sharp decline in explanatory power does suggests a significant difference in the year 2002 that may be a result of the events of 2001 causing changes in the purchase of APNAS that is unrelated to the variables used in the regression.

[31] It is possible that the integration of Andersen Australia and Ernst and Young on the 27th May 2002 might have confounding effects for the 2002 regression. Therefore, the 2002 regression was re-estimated using a reduced sample by removing all firms that were audited by Arthur Andersen in 2001. In the regression, both B_SIZE, A_MSHIP and NEWCEO lost their significance after the Andersen firms were removed and A_MEET became significantly negative (p = .060, one-tailed). The regression also return a fairly similar adjusted R^2 of 15%. The full regressions are reported in appendix A2.4.

Table 14 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables comparing 2002 with the remaining years

$$APNAS/TFEE = \alpha + \beta_1 B\_SIZE + \beta_2 B\_DSHIPS + \beta_3 B\_MEET + \beta_4 B\_FINLIT + \beta_5 B\_OUTSIDE + \beta_6 B\_CHAIR + \beta_7 A\_SIZE + \beta_8 A\_MSHIP + \beta_9 A\_MEET + \beta_{10} A\_FINLIT + \beta_{11} A\_OUTSIDE + \beta_{12} A\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

Panel A: Regression result for 3 year pooled sample 1999-2001

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		-0.0770	-1.211	.226
Board of Directors Variables				
B_SIZE	+	0.0147	3.333	**.000**
B_DSHIP	-	-0.0367	-2.148	**.016**
B_MEET	-	0.0089	4.997	**.000**
B_FINLIT	-	-0.0722	-1.787	**.037**
B_OUTSIDE	-	0.0169	0.394	.347
B_CHAIR	-	0.0143	0.823	.205
Audit Committee Variables				
A_SIZE	-	-0.0108	-1.709	**.044**
A_MSHIP	-	0.0073	0.580	.281
A_MEET	-	-0.0025	-0.583	.280
A_FINLIT	-	0.0076	0.266	.395
A_OUTSIDE	-	0.0029	0.101	.460
A_CHAIR	-	0.0118	0.507	.306
Control Variables				
BLOCK	-	0.0004	1.237	.108
BIG5	+	0.0942	4.642	**.000**
AUD_SPEC #	?	0.0107	0.583	.560
ALOCKS	+	0.0086	1.319	**.094**
MINING	-	-0.0534	-2.755	**.003**
FINANCIAL	-	0.0243	1.071	.142
UTILITIES	-	0.0752	2.639	**.004**
ASSETS	+	0.0190	3.289	**.001**
ALLSUBS	+	-0.0011	-0.154	.439
RESTRUCT	+	0.0556	2.855	**.002**
NEWCEO	+	0.0611	2.817	**.002**
NEWISSUE	+	0.0546	3.392	**.000**
NEGROI	-	-0.0006	-1.167	.122
LEVERAGE	-	-0.0002	-0.671	.251
NAS_SPEC	+	0.0436	2.351	**.009**
US_LIST	-	-0.0146	-0.561	.287
US_SUB	-	0.0199	1.170	.121
YEAR1 #	?	-0.0686	-1.718	**.086**
	Adjusted R^2		.193	
	F statistic		10.490	
	(significance)		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Table 14 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the 2002

Panel B: Regression result for 2002

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		0.2594	2.114	**.035**
Board of Directors Variables				
B_SIZE	+	0.0106	1.349	**.089**
B_DSHIP	-	-0.0680	-1.972	**.025**
B_MEET	-	0.0031	1.111	.134
B_FINLIT	-	-0.0166	-0.239	.406
B_OUTSIDE	-	-0.0589	-0.792	.215
B_CHAIR	-	0.0264	0.873	.192
Audit Committee Variables				
A_SIZE	-	-0.0076	-0.646	.259
A_MSHIP	-	0.0464	1.752	**.040**
A_MEET	-	-0.0100	-1.257	.105
A_FINLIT	-	-0.0316	-0.638	.262
A_OUTSIDE	-	0.0586	1.160	.123
A_CHAIR	-	-0.0372	-0.854	.197
Control Variables				
BLOCK	-	-0.0002	-0.362	.359
BIG5	+	0.1125	3.077	**.001**
AUD_SPEC #	?	-0.0738	-2.213	**.028**
ALOCKS	+	0.0103	0.875	.191
MINING	-	-0.0046	-0.154	.439
FINANCIAL	-	0.0986	2.604	**.005**
UTILITIES	-	-0.0039	-0.056	.477
ASSETS	+	0.0015	0.147	.442
ALLSUBS	+	0.0090	0.813	.208
RESTRUCT	+	0.0457	1.034	.151
NEWCEO	+	0.0847	1.335	**.091**
NEWISSUE	+	0.0003	0.013	.495
NEGROI	-	0.0699	1.041	.149
LEVERAGE	-	-0.0055	-0.678	.249
NAS_SPEC	+	0.1292	3.832	**.000**
US_LIST	-	0.0846	1.979	**.024**
US_SUB	-	0.0348	1.234	.109
YEAR1 #	?	-0.0483	-1.564	.119
	Adjusted R^2		.148	
	F statistic		3.382	
	(significance)		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Table 14 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the 2002

Panel C: Comparison between 2002 and 1999-2001

	Pred. Sign.	1999-2002 4 year pooled Estimate	p#	1999-2001 3 year pooled Estimate	p#	2002 Estimate	p#
(Constant) #		0.0010	.988	-0.0770	.226	0.2594	**.035**
Board of Directors Variables							
B_SIZE	+	0.0140	**.000**	0.0147	**.000**	0.0106	**.089**
B_DSHIP	-	-0.0400	**.004**	-0.0367	**.016**	-0.0680	**.025**
B_MEET	-	0.0080	**.000**	0.0089	**.000**	0.0031	.134
B_FINLIT	-	-0.0550	**.056**	-0.0722	**.037**	-0.0166	.406
B_OUTSIDE	-	-0.0050	.445	0.0169	.347	-0.0589	.215
B_CHAIR	-	0.0180	.115	0.0143	.205	0.0264	.192
Audit Committee Variables							
A_SIZE	-	-0.0110	**.026**	-0.0108	**.044**	-0.0076	.259
A_MSHIP	-	0.0130	.126	0.0073	.281	0.0464	**.040**
A_MEET	-	-0.0040	.136	-0.0025	.280	-0.0100	.105
A_FINLIT	-	0.0001	.499	0.0076	.395	-0.0316	.262
A_OUTSIDE	-	0.0220	.187	0.0029	.460	0.0586	.123
A_CHAIR	-	0.0010	.472	0.0118	.306	-0.0372	.197
Control Variables							
BLOCK_20	-	0.0000	.189	0.0004	.108	-0.0002	.359
BIG5	+	0.0990	**.000**	0.0942	**.000**	0.1125	**.001**
AUD_SPEC #	?	-0.0030	.865	0.0107	.560	-0.0738	**.028**
ALOCKS	+	0.0070	.103	0.0086	**.094**	0.0103	.191
MINING	-	-0.0460	**.002**	-0.0534	**.003**	-0.0046	.439
FINANCIAL	-	0.0400	**.020**	0.0243	.142	0.0986	**.005**
UTILITIES	-	0.0580	**.013**	0.0752	**.004**	-0.0039	.477
ASSETS	+	0.0150	**.002**	0.0190	**.001**	0.0015	.442
ALLSUBS	+	0.0020	.375	-0.0011	.439	0.0090	.208
RESTRUCT	+	0.0530	**.001**	0.0556	**.002**	0.0457	.151
NEWCEO	+	0.0600	**.002**	0.0611	**.002**	0.0847	**.091**
NEWISSUE	+	0.0420	**.001**	0.0546	**.000**	0.0003	.495
NEGROI	-	-0.0010	.147	-0.0006	.122	0.0699	.149
LEVERAGE	-	0.0000	.211	-0.0002	.251	-0.0055	.249
NAS_SPEC	+	0.0610	**.000**	0.0436	**.009**	0.1292	**.000**
US_LIST	-	0.0100	.321	-0.0146	.287	0.0846	**.024**
US_SUB	-	0.0230	.055	0.0199	.121	0.0348	.109
YEAR1 #	?	-0.0570	**.015**	-0.0686	**.086**	-0.0483	.119
Adj R^2		.180		.193		.148	
F statistic		12.695		10.490		3.382	
(significance)		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:
APNAS/TFEE = non-audit fees / total fees

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

5.6.1 Board of directors variables

For the board quality variables, the significant relationships of B_SIZE and B_DSHIP in the full regression was also found in the three year pooled regression (with p = .000; and .016, respectively, both one-tailed) and was also replicated in the 2002

regression (with p = .089; and .025, one-tailed), which are again in the predicted direction supporting H1.1 and H1.2.

Again, similar to the full model regression, in the results of the 3-year 1999-2001 pooled regression, B_MEET was, unexpectedly, positively related to APNAS/TFEE (p = .000, two-tailed) while the coefficient for B_FINLIT was negative and significant (p = .037, one-tailed), supporting H1.4. However, for 2002, B_MEET (p = .134, two-tailed) and B_FINLIT (p = .406, one-tailed) are no longer significant providing no support for H1.3 and H1.4.

The two independence variables, B_OUTSIDE and B_CHAIR are insignificant in both regressions, which is consistent with the results found in the 4 years pooled regression.

5.6.2 Audit committee variables

A_SIZE, which was the only significant audit committee variable in the 4 year regression was again negative and significant in the 3 prior years regression (p = .044, one-tailed) but loses its significance in 2002 (p = .259, one-tailed).

On the other hand, A_MSHIP which was insignificant in the prior three years, is significantly positive in 2002 (p = .081, two-tailed) which is unexpected and does not support H3.2.

5.6.3 Summary of results for test variables

Table 15 summarises the results of the hypothesis testing done for 2002 and compares them with the result found in the 3-year pooled regression as well as the full 4-year pooled results.

Table 15 Summary of hypothesis testing result for the 3-year pooled regression and 2002

			Hypothesis supported		
Hypothesis	**Variable**	**Pred. sign**	**1999-2002 pooled**	**1999-2001 pooled**	**2002**
Quality of the board of directors					
H1.1	B_SIZE	+	yes	yes	yes
H1.2	B_DSHIP	-	yes	yes	yes
H1.3	B_MEET	-			
H1.4	B_FINLIT	-	yes	yes	
Independence of the board of directors					
H2.1	B_OUTSIDE	-			
H2.2	B_CHAIR	-			
Quality of the audit committee					
H3.1	A_SIZE	-	yes	yes	
H3.2	A_MSHIP	-			
H3.3	A_MEET	-			
H3.4	A_FINLIT	-			
Independence of the audit committee					
H4.1	A_OUTSIDE	-			
H4.2	A_CHAIR	-			

Where:

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members

A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise

The drop in explanatory power of the model does suggest that there has been a change in the way firm characteristics relate to APNAS/TFEE. However this drop is most likely explained by lower significance among the control variables rather than the test variables, particularly ASSETS.

The 2002 results were quite weak as well compared to the three prior years, losing the support of all the hypothesis except for two. Although, it is interesting to note that the two that are significant in 2002 are the board quality variables, B_SIZE and B_DSHIP, suggesting that smaller boards and directors holding multiple directorships are more able to restrict large APNAS purchases (relative to the total fee paid to auditors).

The lost of significance for B_FINLIT might be due to the increasing media attention (and hence general awareness) on the possible negative influence APNAS can have on the quality of audit.

This increased media attention would also reinforce the relationship with B_DSHIP, where directors on multiple boards might restrict excessive APNAS spending which might attract attention if one of the firms suffers an audit failure. It is possible that post-2001, the potential reputation effects is more severe for outside directors with

multiple directorships where an audit failure in one firm will negatively affect him/her in the other firms that he is a director of, as well as other future directorships.

It is strange then to note that A_MSHIP is positively significant. Since the audit committee is a subset of the full board, it means that firms with a board made up of outside directors holding multiple directorships tend to purchase less APNAS relative to total fee, unless those directors are members of the audit committee who holds multiple audit committee memberships, in which case they tend to buy more. This could be due to audit committee members having more experience with different audit firms and approve APNAS spending because they are better able to judge the incumbent auditor and trust their competence and independence. While it is also possible that audit committee members on multiple committees have a closer relationship with the audit firms which could lead to a lower independence of the committee member. However the insignificance of the ALOCKS variable in 2002 suggests that that may not be the case.

5.7 Individual year regressions

To test the stability of the results over the first three years, the base model regression was re-estimated separately on each of those years. The results of these regressions are reported in Table 16 below.

Similar to the regression for the pooled samples and 2002, the three regressions for the years 1999-2001 are significant (respectively F = 4.329, p = .000; F = 4.394, p = .000; F = 4.202) also, the explanatory power of the models are quite modest

(respectively, 20%; 20.9%; 19.4%). The three adjusted R^2s are fairly similar to their pooled sample adjusted R^2 (of 19.3%).

Table 16 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the four years 1999-2002 tested individually.

	Pred sign	1999-2002 pooled Est.	p#	1999 Est.	p#	2000 Est.	p#	2001 Est.	p#	2002 Est.	p#
(Constant) #		0.0010	0.988	-0.0934	.370	-0.0760	.547	-0.1002	.367	0.2594	**.035**
Board of directors variables											
B_SIZE	+	0.0140	**0.000**	0.0055	.219	0.0182	**.013**	0.0172	**.014**	0.0106	**.089**
B_DSHIP	-	-0.0400	**0.004**	-0.0558	**.016**	-0.0092	.397	-0.0391	.101	-0.0680	**.025**
B_MEET	-	0.0080	**0.000**	0.0085	**.002**	0.0104	**.000**	0.0054	.055	0.0031	.134
B_FINLIT	-	-0.0550	**0.056**	-0.0841	.115	-0.1277	**.047**	-0.0355	.296	-0.0166	.406
B_OUTSIDE	-	-0.0050	0.445	-0.0322	.328	-0.0588	.240	0.0750	.151	-0.0589	.215
B_CHAIR	-	0.0180	0.115	0.0255	.195	0.0219	.250	0.0002	.497	0.0264	.192
Audit committee variables											
A_SIZE	-	-0.0110	**0.026**	-0.0096	.185	-0.0200	**.043**	0.0037	.373	-0.0076	.259
A_MSHIP	-	0.0130	0.126	0.0123	.234	-0.0183	.254	0.0111	.344	0.0464	**.040**
A_MEET	-	-0.0040	0.136	-0.0067	.158	-0.0023	.372	0.0014	.437	-0.0100	.105
A_FINLIT	-	0.0001	0.499	-0.0078	.436	0.0077	.442	0.0296	.270	-0.0316	.262
A_OUTSIDE	-	0.0220	0.187	-0.0019	.484	0.0545	.170	-0.0102	.421	0.0586	.123
A_CHAIR	-	0.0010	0.472	0.0254	.268	0.0126	.379	0.0228	.291	-0.0372	.197
Control variables											
BLOCK	-	0.0000	0.189	-0.0001	.440	0.0008	.074	0.0002	.346	-0.0002	.359
BIG5	+	0.0990	**0.000**	0.0684	**.021**	0.1154	**.001**	0.1287	**.000**	0.1125	**.001**
AUD_SPEC #	?	-0.0030	0.865	0.1092	**.000**	-0.0576	**.075**	-0.0503	.168	-0.0738	**.028**
ALOCKS	+	0.0070	0.103	0.0182	**.041**	0.0160	.111	-0.0017	.439	0.0103	.191
MINING	-	-0.0460	**0.002**	-0.0145	.321	-0.1262	**.000**	-0.0474	**.079**	-0.0046	.439
FINANCIAL	-	0.0400	**0.020**	0.0167	.330	0.0411	.163	-0.0093	.407	0.0986	**.005**
UTILITIES	-	0.0580	**0.013**	0.2070	**.000**	0.0592	.128	-0.0253	.298	-0.0039	.477
ASSETS	+	0.0150	**0.002**	0.0309	**.000**	0.0185	**.049**	0.0161	**.067**	0.0015	.442
ALLSUBS	+	0.0020	0.375	0.0007	.476	0.0000	.499	-0.0100	.201	0.0090	.208
RESTRUCT	+	0.0530	**0.001**	0.0204	.261	0.1082	**.000**	0.0341	.253	0.0457	.151
NEWCEO	+	0.0600	**0.002**	0.0679	**.081**	0.0582	**.057**	0.0501	**.080**	0.0847	**.091**
NEWISSUE	+	0.0420	**0.001**	0.0234	.202	0.0554	**.030**	0.0632	**.013**	0.0003	.495
NEGROI	-	-0.0010	0.147	-0.0011	**.026**	-0.0552	.137	0.0020	.097	0.0699	.149
LEVERAGE	-	0.0000	0.211	0.0000	.479	-0.0030	.200	-0.0003	.478	-0.0055	.249
NAS_SPEC	+	0.0610	**0.000**	-0.0440	.088	0.0772	**.008**	0.1037	**.002**	0.1292	**.000**
US_LIST	-	0.0100	0.321	-0.0517	.126	-0.0345	.237	0.0464	.148	0.0846	**.024**
US_SUB	-	0.0230	0.055	0.0130	.331	-0.0172	.288	0.0527	**.032**	0.0348	.109
YEAR1 #	?	-0.0570	**0.015**	-0.0901	.148	-0.0529	.522	-0.0668	.328	-0.0483	.119
Adj R^2		.180		.200		.209		.194		.148	
F statistic		12.695		4.329		4.394		4.202		3.382	
(significance)		.000		.000		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

5.7.1 Board of directors variables

For the board quality variables, both quality measures of the board (B_SIZE and B_DSHIP) were significant and in the predicted direction in the 4-year pooled

regression. The positive relation of board size to APNAS spending in the 4-year regression seems to be driven by the years 2000, 2001 and 2002(p = .013; .014, and .089 one-tailed), with 1999 insignificant (p = .219, one-tailed).

On the other hand, the negative relation of B_DSHIP seems mainly driven by the 1999 (p = .016, one-tailed) and 2002 (p = .025, one-tailed) with 2000 and 2001 insignificant (p = .397 and .101, one-tailed).

In the pooled regression, the financial literacy of the board was negatively related to APNAS/TFEE. When the sample was split into the individual years, the only year in which the coefficient of B_FINLIT is significant was 2000 (p = .047, one-tailed). It is possible that firms with boards made up of a high percentage of financially literate directors start placing increased scrutiny and/or restraint on the spending of APNAS during the period where there is increased debate over possible threats to auditor quality. However following the high profile collapses of 2001, this issue is brought into the general domain where even boards with low number of directors with financial backgrounds becoming informed of the potential effects of APNAS on auditor independence and quality.

It seems as if multiple directorships was the main constraint on excessive APNAS spending during 1999 but for 2000, it was a financially literacy coupled with a smaller, arguably more effective board that was related to lower buying of APNAS. Yet, by 2001, the significance of financial literacy dropped off.

The coefficient of B_MEET was significantly positive in the 4-year pooled regression which was not the predicted direction by H1.3. The individual yearly regression further supports this result with the coefficient of B_MEET being positively significant for the earlier two years 1999 and 2000 (p = .004; and .001; both two-tailed).

However in 2001 and 2002 it is insignificant. A possible explanation for this effect could be that increased media attention to the negative effects of APNAS cause diligent boards to become more reluctant to purchase NAS from their auditor.

Similar to the pooled regression, the coefficients of B_OUTSIDE and B_CHAIR are insignificant in all individual years, suggesting that board independence does not affect the firms' purchase of APNAS.

5.7.2 Audit committee variables

The negative relation of A_SIZE in the pooled regression seems to be driven by solely by 2000, where it was negatively significant (p = .043, one-tailed).

The coefficients of A_MSHIP, A_MEET, A_FINLIT, A_OUTSIDE, and A_CHAIR are all insignificant for all three years, same as in the pooled three-year regression. The only exception to this being A_MSHIP for 2002 discussed above.

5.7.3 Summary of results for test variables

Table 17 summarises the results of the hypothesis testing done for each of the four sample years separately as well as the 3 year pooled regression.

Table 17 Summary of hypothesis testing result for the four years individually tested

			Hypothesis supported				
Hypothesis	**Variable**	**Pred. sign**	**4 years**	**1999**	**2000**	**2001**	**2002**
Quality of the board of directors							
H1.1	B_SIZE	+	yes		yes	yes	yes
H1.2	B_DSHIP	-	yes	yes			yes
H1.3	B_MEET	-					
H1.4	B_FINLIT	-	yes		yes		
Independence of the board of directors							
H2.1	B_OUTSIDE	-					
H2.2	B_CHAIR	-					
Quality of the audit committee							
H3.1	A_SIZE	-	yes		yes		
H3.2	A_MSHIP	-					
H3.3	A_MEET	-					
H3.4	A_FINLIT	-					
Independence of the audit committee							
H4.1	A_OUTSIDE	-					
H4.2	A_CHAIR	-					

Where:

B_SIZE = number of board members
B_DSHIPS = average number of directorships by outside directors on the board
B_MEET = sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT = percentage of outside directors with a financial background on the board
B_OUTSIDE = percentage of outside directors on the board
B_CHAIR = 1 if chairman is an outside director; 0 otherwise
A_SIZE = number of audit committee members
A_MSHIP = average number of audit committee memberships by outside audit committee members on the board
A_MEET = sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT = percentage of outside audit committee members with a financial background on the board
A_OUTSIDE = percentage of outside directors in the audit committee
A_CHAIR = 1 if chairman of audit committee is an outside director; 0 otherwise

While the earlier comparison of 2002 against the pooled 1999-2001 suggested that the relationship between APNAS/TFEE and the test variables changed dramatically, the individual years regression show that the results for the first three years were also weaker as well.

It would seem that the strongest of the results came from the year 2000 whereas 2001 was provided the weakest results. Overall, there is less support for the hypotheses in the individual years compared to the 4-year pooled regression.

A possible explanation for this could simply be that in each of the years, APNAS spending was influenced by different aspects of the board of directors and audit committee.

Also, the weaker results could be a result of lost degrees of freedom since the sub-samples are much smaller and the regression model involves a large number of variables. This is made worse with the possible presence of multicollinearity which might reduce the power of the tests.

5.7.4 Control variables

Some of the control variables returned interesting results when separate regression was estimated on the four years. These are further examined below.

Although AUD_SPEC was insignificant in the pooled 4-year regression, it is positively significant in 1999 (p = .000, two-tailed), and negatively significant in 2000 (p = .075, two-tailed) and 2002 (p = .028, two-tailed). On the other hand, NAS_SPEC

is insignificant in 1999 (p = .176, two-tailed) but positively significant in the later three years (2000: p = .008, one-tailed; 2001: p = .002, one-tailed; and 2002: p = .000, one-tailed) as well as in the 4-year pooled regression. These results indicate that for the year 1999 audit firms identified as specialist auditors in an industry sell more APNAS relative to total fee but firms identified as a specialist APNAS provider has no influence on the level of APNAS being sold. However for the subsequent three years, audit firms identified as specialist auditor in an industry sell less APNAS but firms identified as a specialist APNAS provider sell more. This could be a result of the NAS arm of the audit firms becoming more mature and separate from the audit arm of the firm.

One of the possible explanation for the drop in adjusted R^2 is the lost of significance of ASSETS, whose significance has been declining over the three years and finally, was insignificant in 2002. The increased political costs involved with spending high levels of APNAS relative to total fee might be an explanation for this.[32]

The strong positive correlation between RESTRUCT and APNAS/TFEE found in the 4-year pooled regression seems to be driven by the year 2000, which is the only year the coefficient is significant (p= .000, one-tailed). This is probably due to the larger incidence of restructuring in that year, where 90 of the 387 sample firms (or 23%) were identified as having undergone restructuring (percentage of firms identified as having undergone restructuring was 16% for 1999; 6% for 2001; 7% for 2002). The

[32] To see if there was any major change in assets for that year, the natural logs of assets for firms in 2001 and 2002 were compared. The sample yielded 309 matched pairs and had a correlation coefficient of 97.64%, which suggests that the assets figure were not dramatically different from the previous year. However, there is a survivor bias in the selection for the matched pairs as they were firms that remained in the roughly top 500 firms for both years so their assets figures may be more stable than the other firms that were dropped out.

result could be due to IT infrastructure upgrades in relation to the Y2K bug. Given its strong significance, it suggests that a substantial part of the restructure expenditure was spent buying NAS from their auditor. Given that IT services was one of the revenue sources banned in the US by the Sarbanes-Oxley act, it is interesting to note that the regression for year 2000 produced the highest adjusted R^2 as well as the most number of significant test variables.

The coefficients for US_LIST are insignificant in the 4-year pooled regression as well as each of the three individual year regressions. However, it is positively significant in 2002 (p= .049, two-tailed) which is in the unexpected direction. It was expected that the firm's stocks being listed in an American stocks exchange would lead to less APNAS spending as a result of the higher level of focus on APNAS there, especially after the events of 2001. However the result indicated that for the year 2002, firms that are listed in the US spend more APNAS relative to total fee. A possible explanation for this could be that the increased regulation and scrutiny has lead to the audit firms being more thorough and diligent in their accounting for and reporting of NAS provided to their audit clients.

While the pooled result for YEAR1 was highly significant, none of the results for the individual years were significant. This is probably due to the low number of audit firm changes per year leading to the low power of the test.

5.8 Separately testing board and audit committee variables

The board and audit committee variables are significantly correlated with each other. To investigate if multicollinearity between the board and audit committee variables is

reducing their explanatory power, the regression is estimated with only one set of variables at a time (either board or audit committee variables).

5.8.1 Board of directors variables

Firstly, regression is estimated without the audit committee test variables for the 1999-2002 4-year pooled sample, as well as for each of the four years 1999-2002.

The results of these regressions are reported in Table 18 below. All the regressions are significant (4-year pooled F = 15.565; 1999 F = 5.328; 2000 F = 5.296; 2001 F = 5.263; and 2002 F = 3.896) and have comparable adjusted R^2s to the full regression (4-year pooled adj R^2 = 17.9%; 1999 adj R^2 = 20.7%; 2000 adj R^2 =21.1%; 2001 adj R^2 =20.4%; and 2002 adj R^2 =14.4%).

Table 18 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board Quality and Independence and Control Variables

$$APNAS/TFEE = \alpha + \beta_1 B\_SIZE + \beta_2 B\_DSHIPS + \beta_3 B\_MEET + \beta_4 B\_FINLIT + \beta_5 B\_OUTSIDE + \beta_6 B\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

	Pred sign	4 years* Est.	p#	1999 Est.	p#	2000 Est.	p#	2001 Est.	p#	2002 Est.	p#
(Constant) #		0.006	.915	-0.0727	.465	-0.0772	.530	-0.0952	.364	0.2231	**.057**
Board of directors variables											
B_SIZE	+	0.012	**.001**	0.0041	.273	0.0158	**.021**	0.0191	**.005**	0.0099	**.093**
B_DSHIP	-	-0.030	**.005**	-0.0428	**.015**	-0.0273	.146	-0.0315	**.092**	-0.0253	.164
B_MEET	-	0.007	**.000**	0.0078	**.003**	0.0094	**.001**	0.0059	**.034**	0.0031	.115
B_FINLIT	-	-0.056	**.017**	-0.0946	**.031**	-0.1100	**.025**	-0.0134	.399	-0.0366	.248
B_OUTSIDE	-	0.010	.373	-0.0248	.344	-0.0129	.427	0.0814	.093	-0.0384	.273
B_CHAIR	-	0.016	.137	0.0253	.192	0.0193	.272	0.0035	.452	0.0212	.240
Control variables											
BLOCK	-	0.000	.186	0.0000	.463	0.0007	.101	0.0002	.337	-0.0002	.363
BIG5	+	0.098	**.000**	0.0733	**.012**	0.1134	**.002**	0.1286	**.000**	0.1160	**.001**
AUD_SPEC #	?	-0.004	.810	0.1094	**.000**	-0.0574	**.073**	-0.0500	.166	-0.0713	**.031**
ALOCKS	+	0.007	.118	0.0164	**.056**	0.0165	.100	-0.0017	.438	0.0076	.258
MINING	-	-0.044	**.003**	-0.0098	.375	-0.1158	**.001**	-0.0489	**.070**	-0.0106	.358
FINANCIAL	-	0.035	**.031**	0.0194	.300	0.0361	.189	-0.0135	.364	0.0849	**.011**
UTILITIES	-	0.060	**.010**	0.2089	**.000**	0.0631	.112	-0.0282	.274	-0.0222	.372
ASSETS	+	0.013	**.005**	0.0273	**.001**	0.0179	**.053**	0.0167	**.056**	-0.0008	.469
ALLSUBS	+	0.002	.356	0.0003	.488	-0.0016	.448	-0.0096	.209	0.0121	.134
RESTRUCT	+	0.054	**.001**	0.0201	.262	0.1027	**.000**	0.0351	.245	0.0454	.151
NEWCEO	+	0.059	**.002**	0.0633	**.094**	0.0490	**.089**	0.0506	**.074**	0.0750	.116
NEWISSUE	+	0.044	**.000**	0.0284	.151	0.0531	**.033**	0.0612	**.014**	0.0020	.468
NEGROI	-	-0.001	.138	-0.0012	**.018**	-0.0635	**.094**	0.0020	**.091**	0.0679	.156
LEVERAGE	-	0.000	.190	0.0000	.462	-0.0032	.182	0.0002	.486	-0.0054	.252
NAS_SPEC	+	0.064	**.000**	-0.0449	.082	0.0818	**.005**	0.1022	**.002**	0.1284	**.000**
US_LIST	-	0.010	.330	-0.0489	.137	-0.0346	.234	0.0435	.160	0.0821	**.027**
US_SUB	-	0.023	**.057**	0.0124	.338	-0.0185	.274	0.0524	**.032**	0.0334	.118
YEAR1 #	?	-0.055	**.018**	-0.0917	.135	-0.0380	.641	-0.0620	.358	-0.0494	.109
Adj R^2		.179		.207		.211		.204		.144	
F statistic		15.565		5.328		5.296		5.263		3.896	
(significance)		.000		.000		.000		.000		.000	

* regression uses the pooled sample from the years 1999-2002

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE = non-audit fees / total fees

B_SIZE = number of board members

B_DSHIPS = average number of directorships by outside directors on the board

B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

In the restricted regression for the 4-year pooled regression, the results for the test variables are the same as for the full regression which included the audit committee variables. The coefficients for B_SIZE and B_MEET were both positive and significant (respectively, p =.001, one-tailed; and p = .000, two-tailed) and the coefficients for B_DSHIP and B_FINLIT are negative and significant (p =.005; and p = .017, one-tailed). The coefficients for B_OUTSIDE and B_CHAIR and insignificant.

When the model was estimated for each of the four years, the regression with only board variables for 2000 produced the same results as the full model with B_SIZE,

B_MEET and B_FINLIT being significant and of the expected direction (p =.021; p =.001; and p = .025, one-tailed).

The restricted regressions for 1999 and 2001 both produced a greater number of significant coefficients in the test variables. In the 1999 restricted regression, in addition to B_DSHIP and B_MEET which were significant in the full model, B_FINLIT was also significant (p = .031) and negative, supporting H1.4.

In the 2001 restricted regression, in addition to B_SIZE which were significant in the full model, B_DSHIP was also significant (p = .092, one tailed) and negative, supporting H1.2. In addition, B_MEET was significant (p = .068, two-tailed) and positive, which does not support H1.3.

However the restricted regression for 2002 produced less significant results compared to the full model, losing significance for B_DSHIP.

5.8.2 Audit committee variables

The regressions are also estimated without the board test variables for the 1999-2002 4-year pooled sample and for each of the four years individually. Because these regressions focus on the audit committee, firms without audit committees were deleted from the sample.

The full sample was also used with a dummy variable added in which equalled 1 if the firm had an audit committee and 0 otherwise. The regression produced the same

results, and a positive significance for the audit committee dummy variable. The full results of the regression are reported in appendix A2.5.

The results of these regressions are reported in Table 19 below. As is with the board only variable regressions in the previous sub-chapter, all the regressions are significant (4-year pooled F =13.539; 1999 F = 4.758; 2000 F = 4.726; 2001 F = 4.717; and 2002 F = 3.550) and have comparable adjusted R^2s to the full regression (4-year pooled adj R^2 = 17.0%; 1999 adj R^2 = 19.6%; 2000 adj R^2 = 20.3%; 2001 adj R^2 = 19.6%; and 2002 adj R^2 = 13.9%).

Table 19 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Audit Committee Quality and Independence and Control Variables

$$APNAS/TFEE = \alpha + \beta_7 A\_SIZE + \beta_8 A\_MSHIP + \beta_9 A\_MEET + \beta_{10} A\_FINLIT + \beta_{11} A\_OUTSIDE + \beta_{12} A\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

	Pred	4 years*		1999		2000		2001		2002	
	sign	Est.	p#	Est.	p#	Est.	p#	Est.	p#	Est.	p#
(Constant) #		0.115	**.042**	0.0703	.536	0.1067	.431	-0.0235	.839	0.2551	**.033**
Audit committee variables											
A_SIZE	-	-0.014	**.016**	-0.0249	**.024**	-0.0264	**.029**	0.0010	.468	-0.0023	.431
A_MSHIP	-	-0.014	**.061**	-0.0162	.113	-0.0300	**.081**	-0.0255	.132	0.0109	.299
A_MEET	-	0.000	.450	-0.0044	.259	0.0036	.303	0.0043	.308	-0.0059	.224
A_FINLIT	-	-0.035	**.039**	-0.0717	**.027**	-0.0692	**.052**	0.0116	.386	-0.0326	.204
A_OUTSIDE	-	-0.003	.458	-0.0582	.113	-0.0055	.458	-0.0100	.422	0.0310	.266
A_CHAIR	-	0.022	.136	0.0683	**.049**	0.0371	.184	0.0476	.120	-0.0277	.260
Control variables											
BLOCK	-	0.000	.169	-0.0004	.221	0.0001	.410	-0.0002	.343	-0.0005	.190
BIG5	+	0.130	**.000**	0.0934	**.004**	0.1668	**.000**	0.1557	**.000**	0.1398	**.000**
AUD_SPEC #	?	-0.017	.311	0.1183	**.000**	-0.0908	**.008**	-0.0901	**.020**	-0.0748	**.026**
ALOCKS	+	0.001	.442	0.0052	.285	0.0157	**.080**	-0.0045	.340	-0.0019	.428
MINING	-	-0.040	**.008**	-0.0242	.230	-0.1162	**.002**	-0.0443	.101	0.0056	.427
FINANCIAL	-	0.030	**.059**	0.0273	.242	0.0317	.233	-0.0243	.270	0.0607	**.044**
UTILITIES	-	0.093	**.000**	0.2141	**.000**	0.1017	**.034**	-0.0020	.484	0.0313	.339
ASSETS	+	0.016	**.001**	0.0261	**.005**	0.0194	**.053**	0.0236	**.012**	0.0019	.424
ALLSUBS	+	0.007	.125	0.0082	.250	0.0051	.352	-0.0084	.246	0.0131	.124
RESTRUCT	+	0.065	**.000**	0.0342	.146	0.1223	**.000**	0.0341	.252	0.0744	**.050**
NEWCEO	+	0.056	**.003**	0.0713	**.071**	0.0448	.118	0.0542	**.061**	0.0990	**.062**
NEWISSUE	+	0.043	**.001**	0.0333	.128	0.0718	**.010**	0.0766	**.005**	-0.0062	.404
NEGROI	-	0.002	.112	-0.0169	.423	0.0886	.189	0.0019	.111	0.0518	.238
LEVERAGE	-	0.000	.192	0.0000	.486	-0.0027	.226	0.0000	.498	-0.0044	.287
NAS_SPEC	+	0.076	**.000**	-0.0481	.078	0.1120	**.000**	0.1451	**.000**	0.1270	**.000**
US_LIST	-	0.009	.353	-0.0424	.176	-0.0365	.234	0.0501	.145	0.0735	**.045**
US_SUB	-	0.017	.124	0.0051	.434	-0.0231	.232	0.0535	**.035**	0.0302	.142
YEAR1 #	?	-0.069	**.004**	-0.1433	**.028**	-0.0859	.302	-0.0915	.176	-0.0549	**.081**
Adj R^2		.170		.196		.203		.196		.139	
F statistic		13.539		4.758		4.726		4.717		3.550	
(significance)		.000		.000		.000		.000		.000	

* regression uses the pooled sample from the years 1999-2002

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE = non-audit fees / total fees

A_SIZE = number of audit committee members

A_MSHIP = average number of audit committee memberships by outside audit committee members on the board

A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

The audit committee test variables only regression produced much stronger results compared to the full model. In the full model 4-year pooled regression, only the coefficient for A_SIZE was significant. In the restricted regression, A_SIZE was negative and significant (p = .016, one-tailed) as well. In addition, A_MSHIP and A_FINLIT were also negative and significant (p = .061, .039, both one-tailed). All three coefficients were in the expected direction and supports H3.1, H3.2 and H3.4.

The results for 1999 and 2000 were likewise much stronger in the audit committee variables only regression. The significance of the coefficient for A_SIZE and A_FINLIT in the pooled regression was also found in 1999 and 2000 (p = .024, .029

for A_SIZE; p = .027, .052 for A_FINLIT, all one-tailed). A_MSHIP was only significant in 2000 (p = .081, one-tailed).

The remaining three variables A_MEET, A_OUTSIDE and A_CHAIR are all insignificant, as are all the test variables in 2001 and 2002.

An exception to this was A_CHAIR in 1999 which had an unexpectedly positive relationship with APNAS. It is unclear why an independent audit committee chair would be related to higher APNAS spending. A possible reason could be that firms with independent audit committee chairs tend to be larger firms and some APNAS expenditure not fully controlled by the ASSETS variable was picked up by the A_CHAIR. The mean total assets of companies with an independent audit committee chair was 3 times larger than those with an insider. However, the variable does not exhibit high correlation with total assets nor are statistics for 1999 remarkably different to those of the other years.

5.8.3 Summary of results

Table 20 summarises the result of the hypothesis testing done for the pooled sample as well as the 4 individual years using only one set of test variables, either the board variables, or the audit committee variables. Also replicated in panel B for comparison is the result for the same samples tested when the full model was used.

Table 20 Summary of hypothesis testing results using only one set of test variables for the 1999-2002 pooled sample and for the four years individually tested

Panel A: Hypothesis testing for the regressions using only one set of test variables

			Hypothesis supported				
Hypothesis	**Variable**	**Pred. sign**	**4 years**	**1999**	**2000**	**2001**	**2002**
Regression with only board and control variables							
H1.1	B_SIZE	+	yes		yes	yes	yes
H1.2	B_DSHIP	-	yes	yes		yes	
H1.3	B_MEET	-					
H1.4	B_FINLIT	-	yes	yes	yes		
H2.1	B_OUTSIDE	-					
H2.2	B_CHAIR	-					
Adj. R^2			.179	.207	.211	.204	.144
Regression with only audit committee and control variables							
H3.1	A_SIZE	-	yes	yes	yes		
H3.2	A_MSHIP	-	yes		yes		
H3.3	A_MEET	-					
H3.4	A_FINLIT	-	yes	yes	yes		
H4.1	A_OUTSIDE	-					
H4.2	A_CHAIR	-					
Adj. R^2			.170	.196	.203	.196	.139

Panel B: Hypothesis testing using the full model

			Hypothesis supported				
Hypothesis	**Variable**	**Pred. sign**	**4 years**	**1999**	**2000**	**2001**	**2002**
Full model: Board variables							
H1.1	B_SIZE	+	yes		yes	yes	yes
H1.2	B_DSHIP	-	yes	yes			yes
H1.3	B_MEET	-					
H1.4	B_FINLIT	-	yes		yes		
H2.1	B_OUTSIDE	-					
H2.2	B_CHAIR	-					
Full model: Audit committee variables							
H3.1	A_SIZE	-	yes		yes		
H3.2	A_MSHIP	-					
H3.3	A_MEET	-					
H3.4	A_FINLIT	-					
H4.1	A_OUTSIDE	-					
H4.2	A_CHAIR	-					
Adj. R^2			.180	.200	.209	.194	.148

Where:

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise

While the restricted regression with only board variables produce the same significant test variables in the pooled 4-year sample as well as several of the individual yearly regressions, the audit committee variables only regression produce a much stronger result. Quite often mimicking their corresponding board variable.

This suggests that most of the variations in APNAS/TFEE that can be explained by the audit committee variables are better explained by using board variables instead. This is also reflected in the adjusted R^2s where the board variables only regression producing similiar adjusted R^2s compared to the full regression and the audit committee variables only regression returning lower adjusted R^2s.

The restricted regression also produced stronger results for the size of the audit committee. And despite the predicted direction being the opposite to board size, the significant coefficients for A_SIZE and B_SIZE are all in their predicted direction which supports H1.1 and H3.1.

Examining the 4-year pooled regression in greater detail, all the board variables that supported the monitoring hypothesis in the full regression (B_SIZE, B_DSHIP and B_FINLIT) were once again significant in the restricted board variables only regression. Also, their corresponding audit committee variables (A_SIZE, A_MSHIP and A_FINLIT) were also significant and supported the monitoring hypothesis in the restricted audit committee variables only regression. However in the full model, all the audit committee variables except for A_SIZE became insignificant. This again suggests that variation in the board variables dominate the variation in audit committee variables in explaining variations in APNAS/TFEE. The only exception to this was A_SIZE which theory had predicted was related to APNAS/TFEE in an opposite way to B_SIZE.

In the later two years 2001 and 2002, the restricted regression for the board maintained the significant coefficient for B_SIZE and gained significance for B_DSHIP in 2001 but lost it for 2002, showing some instability to the results.

Overall the results seemed more stable in the earlier years of 1999 and 2000 compared to 2001 and 2002, with the year 2000 showing the strongest result, supporting H1.1, H1.4, H3.1, H3.2 and H3.4. This was consistent with the full model testing, where 2000 also produced the strongest result among the four years.

5.9 Substitution hypothesis

To test the substitution hypothesis, the firms are ranked by their ratio of assets-in-place to growth options and then split into three sub-samples. The high growth option sub-sample contained the smallest quartile of firms, the moderate contained the middle two quartile, and the high assets-in-place sub-sample contained the highest quartile. Separate regressions are then run on each of the three sub-samples, high growth options; moderate; and high assets-in-place.

The full regression model is run on the three sub-samples. The results of these regressions are reported in Table 21. The three regressions are all significant but again shows relatively low explanatory power (high growth option sub-sample: $F = 3.843$, $p = .000$, adjusted $R^2 = 17.5\%$; Moderate levels of growth options and assets-in-place: $F = 7.825$, $p = .000$, adjusted $R^2 = 20.4\%$; High assets-in-place sub-sample: $F = 4.866$, $p = .000$, adjusted $R^2 = 22.5\%$)

Table 21 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the Four Years 1999-2002 Pooled Sample broken down into 3 sub-samples ranked on AIP/GO.

	Pred. Sign.^	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		0.083	0.520	-0.031	0.722	0.052	0.341
Board of Directors Variables							
B_SIZE	-,+,-	0.036	**0.000**	0.011	**0.017**	0.003	0.346
B_DSHIP	+,-,+	-0.007	0.418	-0.051	**0.007**	-0.052	**0.046**
B_MEET	+,-,+	0.005	**0.061**	0.010	**0.000**	0.005	**0.036**
B_FINLIT	+,-,+	0.071	0.183	-0.061	**0.099**	-0.136	**0.026**
B_OUTSIDE	+,-,+	0.091	0.131	0.044	0.197	-0.196	**0.004**
B_CHAIR	+,-,+	0.005	0.434	0.022	0.131	0.025	0.211
Audit Committee Variables							
A_SIZE	+,-,+	0.004	0.365	-0.021	**0.003**	0.005	0.330
A_MSHIP	+,-,+	0.000	0.500	0.010	0.242	0.015	0.286
A_MEET	+,-,+	-0.008	0.212	-0.007	**0.062**	-0.005	0.247
A_FINLIT	+,-,+	-0.088	0.055	-0.014	0.343	0.095	**0.029**
A_OUTSIDE	+,-,+	0.037	0.257	0.004	0.457	-0.001	0.490
A_CHAIR	+,-,+	-0.110	**0.016**	0.029	0.138	0.053	0.100
Control Variables							
BLOCK_20	-	0.002	**0.000**	-0.001	**0.050**	0.000	0.274
BIG5	+	0.058	**0.062**	0.117	**0.000**	0.131	**0.000**
AUD_SPEC #	?	-0.031	0.398	-0.005	0.813	0.007	0.413
ALOCKS	+	-0.012	0.197	0.011	**0.067**	0.015	**0.077**
MINING	-	-0.060	**0.060**	-0.031	**0.079**	-0.045	**0.063**
FINANCIAL	-	0.040	0.202	0.050	**0.037**	0.019	0.306
UTILITIES	-	-0.014	0.384	0.085	**0.012**	0.157	**0.010**
ASSETS	+	-0.012	0.163	0.019	**0.010**	0.021	**0.027**
ALLSUBS	+	0.021	**0.058**	0.006	0.237	-0.010	0.202
RESTRUCT	+	0.138	**0.002**	0.029	0.108	0.040	0.105
NEWCEO	+	0.030	0.270	0.083	**0.001**	0.047	0.107
NEWISSUE	+	0.065	**0.010**	0.021	0.128	0.072	**0.007**
NEGROI	-	0.000	0.251	0.034	0.284	0.035	0.343
LEVERAGE	-	-0.001	0.259	0.000	0.187	-0.002	0.398
NAS_SPEC	+	0.083	**0.014**	0.041	**0.024**	0.075	**0.008**
US_LIST	-	0.066	**0.072**	-0.016	0.298	0.063	0.122
US_SUB	-	0.034	0.130	0.031	**0.060**	-0.006	0.436
YEAR1 #	?	-0.070	0.166	-0.054	**0.093**	-0.092	**0.031**
Adj R^2		.175		.204		.225	
F statistic		3.843		7.825		4.866	
(significance)		.000		.000		.000	

^ predicted signs for the sub sample are reported in order High GO, Moderate and High AIP where they differ

* Firms are ranked on AIP/GO, the smallest quartile being High GO, middle two quartile being Moderate, and the largest quartile being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise
AIP/GO	=	Accounting book value of total assets divided by the sum of the market value of common equity and the book value of total debt and preferred stock.

5.9.1 Board of directors variables

The coefficient for B_SIZE is significantly positive in the moderate sub-sample (p = .017, one-tailed) as expected. However, the coefficient for the high growth option sub-sample was unexpectedly positive as well (p = .000, two-tailed) and the one for the high assets-in-place sub-sample was insignificant. This shows no evidence that the substitution hypothesis holds in the two extreme sub-samples where it was expected to be dominant.

The coefficient for B_DSHIP is negatively significant in the moderate sub-sample (p = .007, one-tailed). However it is also significantly negative in the high assets-in-place sub-sample (p = .091, two-tailed) and insignificant in the high growth options sub-sample. Again, no support for the substitution hypothesis was found.

The B_MEET coefficients are positively significant for both the high growth options sub-sample (p = .061, one-tailed) and the high assets-in-place sub-sample (p = .036, one-tailed). However, the coefficient for B_MEET is also significantly positive in the moderate sub-sample (p = .000, two-tailed) which was unexpected. This could means that either the substitution hypothesis is dominant in this variable across the investment-production spectrum. Or alternately another possible explanation of the results is that, as suggested above, firms with a high number of board meetings may have a higher demand for NAS, either because it is undergoing a crisis, major change or simply that the type of firm that requires increased monitoring from directors also have a higher demand of NAS.

The coefficient for B_FINLIT is negative and significant in the moderate sub-sample (p = .099, one-tailed), but also negatively significant in the high assets-in-place sub-sample (p = .053, two-tailed) and insignificant in the high growth options sub-sample. This does not support the substitution hypothesis.

The coefficient for B_OUTSIDE is unexpectedly negative in the high assets-in-place sub-sample (p = .008, two-tailed) and insignificant in the moderate and high growth options sub-samples. This again fails to support the substitution hypothesis.

The coefficient for B_CHAIR is insignificant in all three sub-samples.

5.9.2 Audit committee variables

The only audit committee variable that was significant in the full sample regression was A_SIZE (p = .026, one-tailed), which was negative as expected. When the sample is split into the three sub-samples, A_SIZE maintained its negative relationship in the moderate sub-sample (p = .003, one-tailed) but were insignificant in the two extreme sub-samples.

In addition, A_MEET was also only significant in the moderate sub-sample (p = .062, one-tailed), again negative as expected. This provides limited support for the substitution hypothesis.

Despite the lack of significance in the full sample regressions, several other audit committee variables are significant in the various sub-section regressions.

The coefficient for A_FINLIT in the high AIP sub-sample is significant and positive (p = .029; one-tailed) as predicted by the substitution hypothesis. However the coefficient in the high growth options and the moderate sub-sample are insignificant. These results do not provide conclusive support for the substitution hypothesis.

The coefficients for A_CHAIR is significant and negative for the high growth options sub-sample (p = .033; two-tailed), but insignificant in the other two sub-sections.

5.9.3 Summary of results for test variables

Table 22 summarises the results of the hypothesis testing done for each of the three sub-samples, high growth options; moderate; and high assets-in-place.

Table 22 Summary of hypothesis testing result for the sample broken down into 3 sub-samples ranked on AIP/GO

			Hypothesis supported*			
Hypothesis	**Variable**	**Pred sign #**	**Full sample**	**High GO**	**Moderate**	**High AIP**
Quality of the board of directors						
H1.1	B_SIZE	+,-,+,-	yes		yes	
H1.2	B_DSHIP	-,+,-,+	yes		yes	
H1.3	B_MEET	-,+,-,+		yes		yes
H1.4	B_FINLIT	-,+,-,+	yes		yes	
Independence of the board of directors						
H2.1	B_OUTSIDE	-,+,-,+		yes		
H2.2	B_CHAIR	-,+,-,+				
Quality of the audit committee						
H3.1	A_SIZE	-,+,-,+	yes		yes	
H3.2	A_MSHIP	-,+,-,+				
H3.3	A_MEET	-,+,-,+			yes	
H3.4	A_FINLIT	-,+,-,+				yes
Independence of the audit committee						
H4.1	A_OUTSIDE	-,+,-,+				
H4.2	A_CHAIR	-,+,-,+				

The predicted sign listed is the respective predicted signs for the full sample; the high growth options sub-sample; the moderate levels sub-sample and the high assets-in-place sub-sample.

Where:

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise

While the regressions produced some interesting results, on the whole, the results only provide very limited support for the substitution hypothesis. This suggests that, assuming high APNAS leads to a decrease in audit quality, substitution between the monitoring provided by these corporate governance mechanisms generally did not occur in the sample, or that it was not related to the firm's production-investment attributes.

Although there is little evidence to support the substitution hypothesis, it is interesting to note that the sub-sample with the least significance among the test variables was the high growth option sub-sample since these firms are argued to have less reliance on the external audit as a corporate governance mechanism compared to monitoring by the board.

Several variables that were insignificant in the full sample were significant in the smaller sub-samples, such as B_OUTSIDE and several of the audit committee variables.

Also the high assets-in-place sub-sample produced the highest adjusted R^2 among the three sub-samples (22.5% compared to the moderate sub-sample of .204 and the high growth option sub-sample of 17.5%) as well as being higher than that of the full sample (18.0%). The results seems to suggests that relative APNAS spending can be better mapped by the variables used in this study for the firms with high levels of assets-in-place, compared to others. This suggests that while the production-investment spectrum may not explain fully when the substitution or monitoring

hypothesis is dominant, it does affect the way firms purchase APNAS and how it relates to corporate governance and other variables. However, it seems odd that B_SIZE is insignificant in this sub-sample given that its significance was the strongest in the full sample and the least sensitive to the different yearly regressions.

Additional testing was conducted where the firms were divided into the three sub-samples in thirds rather than using quartiles. These results are presented in Appendix A2.6 and similarly produced little support for the substitution hypothesis.

5.10 Summary of results

The main model regression for the 4-year pooled sample 1999-2002 shows relationships between APNAS/TFEE and board size, multiple board directorships board financial literacy and audit committee size consistent with the monitoring hypothesis, in that superior boards and audit committee are associated with lower APNAS.

Of these results, the significance for board size is the strongest being replicated in most of the supplementary regressions that follow.

However in addition to these results, it was found that the number of board meetings was unexpectedly positively related to APNAS/TFEE. This suggests that a diligent board tended to buy more relative APNAS, counter to the expectations of the monitoring hypothesis.

Of particularly note was that none of the independence variables were significant.

A series of supplementary tests of the base model were calculated and reported in Appendix 2. These supplementary tests include:

1. the use of alternate dependent variables, APNAS/AFEE and the natural log of APNAS, both of which produced weaker results compared to APNAS/TFEE
2. an alternate measure of audit committee size, measured as the ratio of the number audit committee members to the number of directors. The regression produced similar results to the main model which used A_SIZE, defined as the number of audit committee members
3. additional testing on sub-samples divided by firm size, which found that the significance of B_SIZE is largely concentrated on the larger firms, that of B_FINLIT seems to be driven by the smaller firms, while the positive significance of B_MEET is quite uniform throughout the various sub-samples.

The reader is referred to Appendix 2 for details of the full results from these supplementary tests.

Next, the composite audit committee effectiveness (ACE) variable used in Abbott et al. (2003) was replicated and a series of regressions were estimated to analyse its relationship with APNAS. It was found that in Australia, ACE was unexpectedly positively related to APNAS, suggesting that effective audit committees are associated with higher APNAS spending. This was found to be driven by the frequency of audit committee meetings. However, when board and other audit committee characteristics were controlled for, the significance of ACE as well as audit committee meeting frequency was lost.

The main regression model was then estimated for 2002, after the spectacular collapses of 2001 which brought auditor independence and APNAS into public criticism. The regression model produced a much lower adjusted R^2 (of 14.8%) compared to those of 1999-2001 (pooled sample at 19.3 %; and individually 20%, 20.9%, and 19.4% respectively). The results also find that only board size and multiple board directorships remain consistent with the monitoring hypothesis. However this has to be interpreted in light of the fact that the regression results for the previous 3 years individually were weaker as well. In particular, it seems that the 2000 regression has the strongest results, while 2001 the weakest. It is possible that the reduced sample size of the individual years reduced the power of the test producing weaker results.

The model was next split into two, one with only the board of directors and control variables while the other had only the audit committee and control variables. This was done to try to avoid possible effects of mulitcollinearity among the test variables. The board only model produced similar results compared to the full model. However when the audit committee variables were regressed without the board variables, in addition to audit committee size, multiple audit committee membership and the financial literacy of the audit committee were also negatively associated to APNAS. This largely mimics the results found in the board variables where size, multiple directorship and financial literacy was also found to be negatively associated. This suggests that while audit committee characteristics are related to APNAS/TFEE, it provided little additional explanation as to variations in APNAS/TFEE over and above that provided by the board.

An interesting exception is the size of the audit committee. Unlike the other variables, while the theory predicted a positive relationship between APNAS/TFEE and board size, it predicted a negative relationship with audit committee size, which was what separately testing the board and audit committee variables found. When the full model was estimated, audit committee size was the only audit committee variable that retained its significance.

To test the substitution hypothesis, the sample then was split into 3 sub-samples ranked on their production-investment attributes, and separate regressions were estimated on each sub-sample.

While several of the test variables are in the predicted direction to support the substitution hypothesis, the expected opposite relationship between the sub-sample with moderate levels of growth options and assets-in-place and the sub-samples with extreme levels of both was not observed. The results show no support for the substitution hypothesis in this sample.

5.11 Summary and conclusions

This chapter reports and analyses the tests of the hypotheses that were developed in Chapter 4. The base model is a multivariate regression testing variables that proxy for the quality and independence of the board of directors and audit committee.

The results suggest that it is the quality and financial literacy of the board of directors, rather than that of the audit committee, that acts as an effective monitor of audit

quality restricting spending on APNAS. However, independence of the board of directors and the audit committee does not seem to affect APNAS spending.

A significant drop in adjusted R^2 in 2002 suggests that a fundamental shift in the way APNAS relates to the variables in the model. However given the instability of the significances of test variable over the period of 1999-2001, it is difficult to interpret its effects.

To test the substitution hypothesis, the sample is then split into three sub-samples with the firms ranked on their ratio of assets-in-place to growth options. The results do not support the existing substitution hypothesis in the sample of company.

However the results above are to be interpreted with care as additional sensitivity testing carried out on the base model shows some sensitivity of the results to model specification and sample selection.

The following chapter provides an overview of the thesis. First, it outlines the theoretical framework of the study. Second, the hypotheses are explained and discussed. The chapter concludes with a discussion of the significance of the findings reported in this chapter, research limitations and future research avenues.

CHAPTER 6. CONCLUSIONS

6.1 Introduction

The purpose of this thesis is to investigate the effects of APNAS on auditor independence by observing its relationship with the board of directors and the audit committee. Chapter 2 reviewed the theoretical framework of the study. Chapter 3 developed the hypotheses to be tested. Chapter 4 described the research method while chapter 5 presented the results of the proposed hypotheses.

This chapter presents an overview of the thesis. It also comments on the limitations of the study and suggests future research directions. Section 6.2 provides an outline of the thesis and its findings. Section 6.3 explains the significance of the findings, and the limitations of the study are addressed in section 6.4. Section 6.5 suggests some future research directions and section 6.6 concludes the study.

6.2 Review of study

6.2.1 Hypotheses

It has been argued that the joint provision of audit and non-audit services will lead to possible threats to the independence of the auditor, reducing the quality of the external audit. Various corporate governance mechanisms are used to safeguard against such potential threats, one of which is the board of directors and its sub-committees, in particular, the audit committee. This leads to the monitoring hypothesis, being that firms with stronger boards and audit committees will purchase significantly less APNAS compared to other firms.

To test the monitoring hypothesis, several aspects of the board and the audit committee were investigated in the following hypotheses.

H1.1: Entities with smaller boards will purchase less APNAS (relative to total fee), other things being equal.

H1.2: Entities where the directors have a larger average number of multiple directorships among the outside directors will purchase less APNAS (relative to total fees) other things being equal.

H1.3: Entities where the board meets more often will purchase less APNAS (relative to total fees), other things being equal.

H1.4: Entities where the board is made up of a higher proportion of financially literate outside directors will purchase less APNAS (relative to total fees), other things being equal.

H2.1: Entities where the board is made up of a higher proportion of outside directors will purchase less APNAS (relative to total fees), other things being equal.

H2.2: Entities with an outside director as chairman will purchase less APNAS (relative to total fees), other things being equal.

H3.1: Entities with larger audit committees will purchase less APNAS (relative to total fee), other things being equal.

H3.2: Entities where the audit committee members have a larger average number of multiple audit committee memberships among the outside members will purchase less APNAS (relative to total fees), other things being equal.

H3.3: Entities where the audit committee meets more often will purchase less APNAS (relative to total fees), other things being equal.

H3.4: Entities where the audit committee is made up of a higher proportion of financially literate outside members will purchase less APNAS (relative to total fees), other things being equal.

H4.1: Entities where the audit committee is made up of a higher proportion of outside directors will purchase less APNAS (relative to total fees), other things being equal.

H4.2: Entities with an outside director as an audit committee chairman will purchase less APNAS (relative to total fees), other things being equal.

In the period leading up and across that under study, there has been a growing scrutiny and public debate regarding APNAS and its potential to threaten auditor independence. This reached a peak with the high profile collapses in 2001 of HIH Insurance in Australia and Enron in the US, which ultimately led to several regulatory changes. This led to the following hypothesis.

H5: Relationship between the proportion of APNAS relative to total fees and board and audit committee characteristics will significantly alter between the period leading up to 2001 and 2002.

It has been argued that firms rely on a bundle of corporate governance mechanisms to manage agency cost, and that some of these mechanisms may be substituted for each other (Rediker and Seth 1995). This leads to the substitution hypothesis which predicts an opposite relationship between board and audit committee and APNAS spending. To determine whether the substitution or monitoring hypothesis is dominant, the firms' production-investment attributes are examined. Firms with

higher assets-in-place have a greater need for monitoring from auditors, while firms with higher growth options rely more on the monitoring from directors (Anderson et al. 1993). So it is argued the substitution hypothesis is dominant in firms at the two extreme ends of the production-investment spectrum, while the monitoring hypothesis is expected to be dominant in firms with moderate levels of assets-in-place and growth options.

This leads to the following two hypotheses.

H6.1: For entities with high levels of assets-in-place or growth options, those with stronger boards and audit committees will purchase more APNAS (relative to total fees) compared to other entities, other things being equal.

H6.2: For entities with moderate levels of assets-in-place and growth options, those with stronger boards and audit committees will purchase less APNAS (relative to total fees) compared to other entities, other things being equal.

6.2.2 Summary of findings

The base model regression for the 4-year pooled sample 1999-2002 shows relationships between APNAS/TFEE and board size, multiple board directorships board financial literacy and audit committee size consistent with the monitoring hypothesis in support of H1.1, H1.2, H1.4 and H3.1.

The composite audit committee effectiveness (ACE) variable used in Abbott et al. (2003) was then replicated and a series of regressions were estimated. It was found that in Australia, ACE was unexpectedly positively related to APNAS, suggesting that effective audit committees are associated with higher APNAS spending. This was

found to be driven by the frequency of audit committee meetings. However, when board and other audit committee characteristics were controlled for, the significance of ACE as well as audit committee meeting frequency was lost.

The main regression was next estimated for 2002, which produced a much lower adjusted R^2 (of 14.8%) compared to those of 1999-2001 (pooled sample at 19.3 %; and individually 20%, 20.9%, and 19.4% respectively). The results also find that only board size and multiple board directorships remain consistent with the monitoring hypothesis. This supports H5. However this has to be interpreted in light of the fact that the regression results for the 3 years individually were weaker as well. In particular, it seems that the 2000 regression has the strongest results, while 2001 the weakest. It is possible that the reduced sample size of the individual years reduced the power of the test producing weaker results.

To try to avoid the possible effects of mulitcollinearity among the test variables, the board of directors variables were estimated without the audit committee variables and vice versa. While the board variables only model produced similar results compared to the full model the audit committee variables only model produced significant negative relationship between APNAS and audit committee size, multiple audit committee membership and the financial literacy of the audit committee, supporting H3.1, H3.2 and H3.4.

This largely mimics the results found in the board variables where size, multiple directorship and financial literacy was also found to be negatively associated. This suggests that while audit committee characteristics are related to APNAS/TFEE, it

provided little additional explanation as to variations in APNAS/TFEE over and above that provided by the board variables.

Finally the firm years was separated into 3 sub-samples ranked on their production-investment attributes. The regression estimated however provided little evidence of substitution between monitoring by the board and audit committee with monitoring from the external audit, with the assumption that high APNAS leads to an decrease in audit quality, failing to support H6.1 and H6.2.

6.3 Significance of findings

This study contributes to the literature on the use of the audit committee as well as the board of directors as a monitoring tool for corporate governance, and its relationship with APNAS. The results of the study do show that the quality and financial literacy for the board as well as the resources available to the audit committee are inversely related to APNAS purchases. This suggests that the directors view APNAS as a threat to independence either in fact or in perception, and effective boards and audit committees restricts its purchase by their company. However the results are unstable across years and sample selection.

An interesting result of the study is that the percentage of outside directors or audit committee members were not associated with APNAS, suggesting that independent directors by themselves do not significantly add to the governance of the company in respect of APNAS unless they have a financial background or governance expertise (measured by multiple directorships/audit committee memberships).

It also provides some evidence on the substitutability of monitoring from boards and audit committee and that from the external audit. Examining partitions of the sample where one form of monitoring is more valuable then the other, little evidence was found to support the hypothesis that high quality boards and audit committees would allow increased APNAS that may threaten the quality of the audit, or that companies would seek a less effective board/audit committee while maintaining a high quality audit.

6.4 Research limitations

6.4.1 Different types of APNAS

One limitation on the use of APNAS fee in this study is that it assumes all types of APNAS threatens auditor independence equally. Given that SOX specifically bans certain APNAS in the US, as well as the prescription by codes of ethics (IFAC Ethics Committee 2001; ICAA and CPAA 2004) it is perceived that beyond the magnitude of the associated revenues certain NAS impact on auditor independence differently, either because of the nature of the work (such as internal auditing) or its time frame (recurring vs. non-recurring; short-term vs. long term).

Australian companies are only required to disclose the amount of fees paid to their auditor for the external audit as well as for all other services. Since the APNAS fee reported is rarely broken down further beyond the regulatory requirements, it was impossible to use archival data to control for the different types of NAS purchased by the firm.

6.4.2 Sensitivity of the results

The biggest limitation to the study involves the sensitivity of the results to changes in model specifications and alterations in the sample used to estimate the base model. This severely limits any interpretation and generalisation of the results generated.

One possible reason for some of the sensitivity could be the relatively small sample size and the large number of variables in the test model. The power of the test may have been reduced when several of the supplementary regressions are carried out on smaller sub-samples (such as the individual yearly regression). The fact that the regression with the strongest result is that of the full four year pooled sample is consistent with this argument.

Another possibility lies with the generally low adjusted R^2s of the regression. This shows that a lot of the variation in APNAS/TFEE is unexplained, and uncontrolled for, and remains so even after including a substantial number of control variables.

This suggests either there are several omitted control variables or that APNAS/TFEE is hard to predict using archival data.

The sensitivity of the results may also lie with the likely presence of multicollinearity among the explanatory variables, particularly as the audit committee is a subset of the full board of directors. However, the significance of the control variables were likewise sensitive to model specification and sample selection (although to a smaller extent than the test variables) suggesting that at least part of the problem is not limited to multicollinearity among the test variables.

6.4.3 Link between board, audit committee and APNAS

The results of the study suggest that effective directors are associated with lower APNAS but it is not a causal link. This is of particular importance given the sesitivity of the results. As the replication of Abbott et al. (2003) shows, the significance of the variables may be lost after other variables are controlled for especially considering the low adjusted R^2s found in the regressions.

If the board or audit committee are the reason for the lower APNAS, the evidence shows that effective directors restrict the purchases of APNAS, presumably to maintain a high quality audit. One reason for this is to avoid the threat to the perceived independence of the auditor.

Care should be taken in interpreting that as APNAS threatening auditor independence in fact as the directors may be reacting to the increasing political costs of high APNAS in the period under investigation.

6.5 Future research avenues

Additional analysis revealed the results to be sensitive to sample selection. A possible avenue for future research would be to investigate those that generated severely different results from the rest of the sample. In particular, the largest quarter of companies and those with high levels of assets in place relative to growth options.

Replicating Abbott et al. (2003) using Australian data found very different results. Furthermore, the significance of the audit committee variable used was lost when it

was estimated together with a more comprehensive list of audit committee as well as board variables. This relationship should be investigated further using US data to see if the results in Abbott et al. (2003) hold after controlling for variations in the board.

The removal of firms that were audited by Andersen in 2001 from the 2002 regression produced significantly different results. While it does show sensitivity of the result to sample selection, it also suggests that the monitoring by the boards of firms audited by one auditor may be different compared to others. Possible future research could explore more comprehensively those differences.

6.6 Conclusions

APNAS has been highlighted and criticised as a threat to independence and in the wake of several spectacular corporate collapses, its provision has been restricted, most notably in the US. Following those corporate collapses, there has been an increasing interest not only in audit quality but also the monitoring of companies by their boards and audit committee as well.

This paper provides evidence that effective boards restrict excessive purchase of APNAS by their companies. Similar results were found for the audit committee but they provided little additional information over that of the board variables, with the exception of the size of the audit committee.

The relationship between board and audit committee variables and APNAS were unstable over the sample period, with it being the strongest in 2000, weakening substantially in 2001 and strengthening in 2002 again. This might be the result of the

corporate collapses that occurred during that time frame and the public and regulatory reaction to it.

Finally, an attempt was made to predict which firms rely more on monitoring from the external audit or the directors based on their production-investment attributes. These firms were compared with moderate firms with no preference. However, little evidence was found supporting the hypothesis that one type of monitoring was substituted for the other.

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APPENDIX 1: ADDITIONAL TABLES AND PLOTS

A1.1 Pearson correlations for 1999-2002

Table 23 below documents the Pearson correlation between the variables for the individual years 1999-2002. Similar to their pooled sample, several of the correlations among the variables are significant, giving rise to possible concerns regarding the presence of high multicollinearity.

Table 23 Pearson correlation coefficients for 1999-2002

Panel A: Pearson correlation coefficients between variables for 1999

	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR
Audit	1.000														
APNAS	0.727 0.000	1.000													
NAS_TFEE	0.122 0.014	0.329 0.000	1.000												
B_SIZE	0.468 0.000	0.400 0.000	0.230 0.000	1.000											
B_DSHIP	0.156 0.002	0.136 0.007	-0.053 0.293	0.057 0.258	1.000										
B_MEET	-0.005 0.914	0.014 0.773	0.183 0.000	0.015 0.768	-0.068 0.177	1.000									
B_FINLIT	0.093 0.063	0.077 0.126	-0.052 0.296	0.011 0.825	0.017 0.730	0.017 0.728	1.000								
B_OUTSIDE	0.119 0.017	0.138 0.006	0.060 0.228	0.181 0.000	0.201 0.000	-0.024 0.635	0.098 0.050	1.000							
B_CHAIR	0.033 0.508	0.035 0.484	0.068 0.173	0.077 0.126	-0.051 0.306	0.033 0.511	0.156 0.002	0.513 0.000	1.000						
AC_SIZE	0.221 0.000	0.204 0.000	0.077 0.123	0.418 0.000	0.027 0.586	0.072 0.153	0.021 0.682	0.170 0.001	0.151 0.003	1.000					
A_MSHIP	0.093 0.064	0.092 0.065	-0.042 0.407	0.045 0.371	0.706 0.000	-0.017 0.728	-0.088 0.077	0.122 0.015	-0.015 0.760	0.170 0.001	1.000				
A_MEET	0.197 0.000	0.173 0.001	0.055 0.272	0.295 0.000	0.117 0.019	0.174 0.000	0.033 0.509	0.133 0.008	0.092 0.068	0.335 0.000	0.216 0.000	1.000			
A_FINLIT	0.054 0.285	0.050 0.315	-0.002 0.961	0.076 0.129	-0.049 0.332	0.109 0.030	0.638 0.000	0.110 0.027	0.158 0.002	0.176 0.000	0.101 0.043	0.182 0.000	1.000		
A_OUTSIDE	0.138 0.006	0.133 0.008	0.062 0.215	0.231 0.000	0.064 0.198	0.063 0.207	0.065 0.197	0.538 0.000	0.347 0.000	0.325 0.000	0.255 0.000	0.325 0.000	0.329 0.000	1.000	
A_CHAIR	0.022 0.657	0.051 0.313	0.055 0.270	0.134 0.007	-0.074 0.142	-0.002 0.971	0.009 0.856	0.437 0.000	0.344 0.000	-0.021 0.680	-0.152 0.002	-0.019 0.709	0.025 0.621	0.396 0.000	1.000
	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel A:Pearson correlation coefficients between variables for 1999 (continued)

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	
BLOCK	-0.060	-0.051	-0.008	0.013	-0.007	-0.215	-0.122	-0.093	-0.111	-0.022	0.068	-0.033	-0.065	0.019	-0.069	BLOCK
	0.235	0.313	0.873	0.795	0.882	0.000	0.015	0.063	0.027	0.658	0.172	0.506	0.192	0.703	0.171	
BIG5	0.166	0.153	0.273	0.267	0.004	0.051	-0.009	0.106	0.066	0.084	-0.081	-0.004	0.000	-0.013	0.026	BIG5
	0.001	0.002	0.000	0.000	0.932	0.307	0.851	0.034	0.188	0.093	0.106	0.931	0.996	0.802	0.600	
AUD_SPEC	0.217	0.235	0.290	0.195	0.034	0.077	-0.030	0.073	0.082	0.075	0.019	0.092	0.012	0.070	0.015	AUD_SPEC
	0.000	0.000	0.000	0.000	0.495	0.122	0.550	0.148	0.102	0.136	0.702	0.065	0.810	0.162	0.767	
ALOCKS	0.282	0.337	0.096	0.253	0.685	-0.059	-0.007	0.183	-0.093	0.159	0.471	0.184	-0.067	0.068	-0.057	ALOCKS
	0.000	0.000	0.054	0.000	0.000	0.236	0.884	0.000	0.064	0.001	0.000	0.000	0.178	0.175	0.252	
Total assets	0.628	0.726	0.144	0.289	0.094	0.012	0.087	0.126	0.072	0.173	0.061	0.142	0.035	0.078	0.042	Total assets
	0.000	0.000	0.004	0.000	0.059	0.816	0.081	0.012	0.151	0.001	0.220	0.005	0.489	0.120	0.401	
Subsidiaries	0.774	0.526	0.141	0.477	0.162	0.000	0.097	0.090	0.007	0.222	0.096	0.195	0.081	0.146	-0.014	Subsidiaries
	0.000	0.000	0.005	0.000	0.001	0.999	0.052	0.071	0.884	0.000	0.055	0.000	0.107	0.003	0.780	
RESTRUCT	0.140	0.088	0.086	0.207	0.020	0.038	0.038	0.104	0.090	0.114	0.001	0.073	0.077	0.160	0.032	RESTRUCT
	0.005	0.080	0.085	0.000	0.689	0.449	0.451	0.038	0.072	0.023	0.982	0.147	0.125	0.001	0.520	
NEWCEO	0.126	0.073	0.097	0.086	0.012	0.030	0.084	-0.002	0.056	0.103	0.012	0.059	0.072	0.057	0.006	NEWCEO
	0.011	0.143	0.053	0.088	0.813	0.553	0.092	0.964	0.268	0.039	0.811	0.238	0.151	0.257	0.911	
NEWISSUE	-0.081	-0.081	0.067	-0.125	-0.119	0.109	-0.096	-0.077	0.016	-0.061	-0.090	-0.159	-0.094	-0.063	0.054	NEWISSUE
	0.105	0.105	0.178	0.012	0.017	0.030	0.055	0.123	0.756	0.221	0.072	0.001	0.060	0.207	0.283	
NEGROI	0.026	0.021	-0.026	0.064	0.062	-0.017	0.083	0.067	0.107	0.161	0.091	0.108	0.100	0.140	-0.027	NEGROI
	0.606	0.676	0.608	0.202	0.217	0.741	0.099	0.179	0.033	0.001	0.070	0.031	0.045	0.005	0.590	
LEVERAGE	-0.006	-0.006	-0.011	0.067	0.012	-0.045	-0.008	0.055	0.043	0.051	-0.024	-0.009	0.035	0.019	0.026	LEVERAGE
	0.905	0.907	0.833	0.181	0.813	0.372	0.873	0.273	0.393	0.305	0.639	0.862	0.483	0.705	0.611	
NAS_SPEC	0.249	0.227	0.199	0.225	0.078	0.071	-0.014	0.113	0.115	0.154	0.040	0.085	0.039	0.090	0.074	NAS_SPEC
	0.000	0.000	0.000	0.000	0.119	0.155	0.773	0.024	0.022	0.002	0.426	0.091	0.432	0.073	0.137	
US_LIST	0.378	0.330	0.079	0.272	0.091	0.025	-0.005	0.070	-0.015	0.148	0.039	0.095	-0.045	0.072	0.090	US_LIST
	0.000	0.000	0.116	0.000	0.070	0.616	0.913	0.165	0.763	0.003	0.432	0.059	0.370	0.149	0.071	
US_SUB	0.362	0.233	0.096	0.224	0.132	0.019	0.010	0.008	-0.020	0.160	0.095	0.115	0.057	0.060	0.000	US_SUB
	0.000	0.000	0.055	0.000	0.008	0.698	0.849	0.876	0.685	0.001	0.058	0.022	0.257	0.228	0.996	
YEAR1	-0.052	-0.046	-0.054	-0.029	-0.032	-0.036	-0.104	-0.005	-0.019	-0.043	-0.009	0.034	-0.030	0.039	0.074	YEAR1
	0.302	0.354	0.278	0.556	0.517	0.468	0.038	0.921	0.699	0.391	0.856	0.493	0.554	0.432	0.137	
AIP/GO	0.169	0.178	0.051	0.064	-0.034	0.057	0.118	0.070	-0.017	0.019	-0.060	0.096	0.042	0.018	0.047	AIP/GO
	0.001	0.000	0.307	0.200	0.495	0.253	0.018	0.164	0.731	0.710	0.230	0.056	0.399	0.725	0.353	
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel A: Pearson correlation coefficients between variables for 1999 (continued)

	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO
BLOCK	1.000															
BIG5	0.059 0.242	1.000														
AUD_SPEC	0.094 0.060	0.419 0.000	1.000													
ALOCKS	0.007 0.883	0.120 0.016	0.173 0.001	1.000												
Total assets	-0.080 0.109	0.082 0.102	0.115 0.022	0.238 0.000	1.000											
Subsidiaries	-0.028 0.574	0.194 0.000	0.203 0.000	0.215 0.000	0.328 0.000	1.000										
RESTRUCT	-0.013 0.793	0.068 0.175	0.083 0.098	0.124 0.013	-0.032 0.520	0.202 0.000	1.000									
NEWCEO	0.003 0.950	0.108 0.031	0.001 0.986	0.013 0.794	0.125 0.012	0.076 0.128	-0.026 0.609	1.000								
NEWISSUE	-0.032 0.529	-0.032 0.525	-0.033 0.505	-0.120 0.017	-0.070 0.163	-0.091 0.070	0.052 0.300	0.039 0.441	1.000							
NEGROI	0.093 0.064	0.135 0.007	0.060 0.231	0.047 0.348	0.012 0.810	0.035 0.480	0.031 0.531	0.018 0.720	-0.042 0.407	1.000						
LEVERAGE	0.060 0.235	0.012 0.810	-0.047 0.345	-0.007 0.891	0.001 0.986	0.018 0.720	0.001 0.983	0.192 0.000	-0.035 0.491	0.005 0.918	1.000					
NAS_SPEC	0.009 0.854	0.499 0.000	0.656 0.000	0.236 0.000	0.141 0.005	0.225 0.000	0.126 0.012	0.077 0.123	-0.060 0.234	0.067 0.180	0.050 0.322	1.000				
US_LIST	-0.063 0.209	0.114 0.023	0.116 0.020	0.214 0.000	0.291 0.000	0.279 0.000	0.040 0.421	0.039 0.436	-0.033 0.515	-0.099 0.047	-0.011 0.827	0.189 0.000	1.000			
US_SUB	-0.095 0.057	0.131 0.009	0.145 0.004	0.154 0.002	0.183 0.000	0.420 0.000	0.064 0.200	0.076 0.127	0.010 0.845	0.040 0.424	0.085 0.089	0.171 0.001	0.273 0.000	1.000		
YEAR1	0.088 0.080	0.067 0.178	0.005 0.917	-0.085 0.089	-0.030 0.550	-0.047 0.353	0.027 0.594	0.066 0.185	0.091 0.068	0.013 0.796	0.042 0.398	0.010 0.834	-0.008 0.879	0.050 0.322	1.000	
AIP/GO	-0.007 0.893	0.047 0.344	0.085 0.088	0.005 0.918	0.263 0.000	0.135 0.007	-0.022 0.654	0.125 0.013	-0.100 0.045	0.084 0.093	0.003 0.957	-0.010 0.839	0.032 0.525	-0.045 0.369	-0.067 0.179	1.000
	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel B: Pearson correlation coefficients between variables for 2000

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR
Audit	1.000														
APNAS	0.717 0.000	1.000													
NAS_TFEE	0.119 0.020	0.318 0.000	1.000												
B_SIZE	0.385 0.000	0.415 0.000	0.283 0.000	1.000											
B_DSHIP	0.158 0.002	0.184 0.000	0.017 0.732	0.164 0.001	1.000										
B_MEET	-0.014 0.787	0.026 0.604	0.209 0.000	-0.039 0.441	-0.106 0.036	1.000									
B_FINLIT	0.043 0.396	0.054 0.288	-0.009 0.853	0.019 0.713	0.018 0.731	0.049 0.339	1.000								
B_OUTSIDE	0.096 0.058	0.141 0.006	0.075 0.139	0.196 0.000	0.247 0.000	-0.040 0.428	0.021 0.679	1.000							
B_CHAIR	0.032 0.535	0.062 0.220	0.066 0.195	0.065 0.204	0.054 0.288	0.044 0.390	-0.021 0.686	0.529 0.000	1.000						
AC_SIZE	0.166 0.001	0.171 0.001	0.072 0.157	0.388 0.000	0.106 0.038	0.100 0.050	0.017 0.735	0.135 0.008	0.133 0.009	1.000					
A_MSHIP	0.137 0.007	0.136 0.007	0.027 0.592	0.188 0.000	0.662 0.000	-0.048 0.344	-0.105 0.039	0.139 0.006	0.060 0.240	0.333 0.000	1.000				
A_MEET	0.207 0.000	0.170 0.001	0.094 0.064	0.321 0.000	0.134 0.008	0.212 0.000	-0.040 0.429	0.121 0.017	0.056 0.270	0.372 0.000	0.263 0.000	1.000			
A_FINLIT	0.024 0.640	0.031 0.541	0.035 0.491	0.165 0.001	-0.016 0.760	0.092 0.071	0.599 0.000	0.046 0.369	0.045 0.374	0.255 0.000	0.190 0.000	0.170 0.001	1.000		
A_OUTSIDE	0.141 0.005	0.145 0.004	0.080 0.115	0.296 0.000	0.156 0.002	-0.013 0.797	-0.030 0.560	0.541 0.000	0.325 0.000	0.404 0.000	0.422 0.000	0.340 0.000	0.292 0.000	1.000	
A_CHAIR	0.068 0.179	0.065 0.201	0.016 0.760	0.106 0.038	0.057 0.267	-0.061 0.229	-0.035 0.495	0.385 0.000	0.327 0.000	-0.031 0.547	-0.083 0.104	0.022 0.669	-0.081 0.110	0.345 0.000	1.000
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel B: Pearson correlation coefficients between variables for 2000 (continued)

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	
BLOCK	-0.053	-0.056	0.007	0.050	-0.077	-0.213	-0.036	-0.151	-0.094	0.023	0.022	-0.027	-0.007	-0.014	-0.109	BLOCK
	0.300	0.275	0.886	0.322	0.132	0.000	0.482	0.003	0.066	0.645	0.666	0.600	0.893	0.786	0.032	
BIG5	0.140	0.136	0.256	0.283	0.039	0.038	-0.012	0.120	0.037	0.135	0.022	0.071	0.055	0.138	0.011	BIG5
	0.006	0.007	0.000	0.000	0.441	0.452	0.807	0.018	0.469	0.008	0.661	0.165	0.277	0.006	0.828	
AUD_SPEC	0.194	0.161	0.098	0.231	0.082	-0.045	-0.035	0.079	0.039	0.084	0.030	0.081	0.008	0.082	0.053	AUD_SPEC
	0.000	0.002	0.055	0.000	0.108	0.378	0.497	0.122	0.439	0.100	0.560	0.112	0.873	0.106	0.301	
ALOCKS	0.190	0.269	0.132	0.323	0.657	-0.042	0.004	0.189	-0.053	0.093	0.381	0.149	-0.002	0.073	-0.031	ALOCKS
	0.000	0.000	0.009	0.000	0.000	0.405	0.943	0.000	0.301	0.066	0.000	0.003	0.963	0.153	0.542	
Total assets	0.664	0.789	0.137	0.271	0.159	0.024	0.069	0.116	0.065	0.105	0.098	0.130	0.023	0.086	0.053	Total assets
	0.000	0.000	0.007	0.000	0.002	0.636	0.174	0.022	0.201	0.039	0.055	0.011	0.652	0.091	0.297	
Subsidiaries	0.741	0.520	0.092	0.389	0.127	-0.049	0.019	0.006	-0.057	0.163	0.111	0.168	0.036	0.105	-0.010	Subsidiaries
	0.000	0.000	0.071	0.000	0.012	0.335	0.710	0.905	0.263	0.001	0.029	0.001	0.479	0.039	0.849	
RESTRUCT	0.171	0.255	0.262	0.251	0.067	0.117	0.101	0.085	0.090	0.188	0.097	0.076	0.117	0.061	0.027	RESTRUCT
	0.001	0.000	0.000	0.000	0.191	0.021	0.047	0.094	0.078	0.000	0.057	0.135	0.022	0.232	0.592	
NEWCEO	-0.020	0.012	0.082	0.037	-0.048	0.020	-0.014	0.002	-0.022	0.076	0.022	0.104	-0.015	0.006	-0.011	NEWCEO
	0.699	0.820	0.108	0.474	0.348	0.690	0.779	0.972	0.670	0.135	0.669	0.041	0.774	0.900	0.830	
NEWISSUE	-0.119	-0.082	0.045	-0.127	-0.088	0.093	-0.002	-0.172	-0.054	-0.078	0.004	-0.168	-0.005	-0.157	-0.100	NEWISSUE
	0.019	0.107	0.382	0.012	0.085	0.067	0.970	0.001	0.287	0.124	0.936	0.001	0.921	0.002	0.049	
NEGROI	0.071	0.058	0.018	0.150	0.016	0.053	0.065	-0.042	0.019	0.250	0.096	0.170	0.201	0.209	-0.013	NEGROI
	0.164	0.255	0.729	0.003	0.747	0.296	0.204	0.405	0.710	0.000	0.058	0.001	0.000	0.000	0.795	
LEVERAGE	0.028	0.096	-0.021	0.015	0.010	0.032	-0.070	-0.034	-0.054	0.030	0.031	0.039	-0.016	0.025	0.028	LEVERAGE
	0.586	0.059	0.682	0.772	0.846	0.529	0.168	0.511	0.291	0.557	0.538	0.442	0.758	0.630	0.589	
NAS_SPEC	0.175	0.221	0.201	0.189	0.067	0.055	-0.021	0.133	0.110	0.004	0.029	0.069	0.001	0.107	-0.008	NAS_SPEC
	0.001	0.000	0.000	0.000	0.189	0.277	0.684	0.009	0.031	0.933	0.571	0.177	0.980	0.035	0.878	
US_LIST	0.266	0.255	-0.014	0.201	0.088	-0.032	-0.067	0.065	-0.080	0.088	0.009	0.122	-0.048	0.057	0.112	US_LIST
	0.000	0.000	0.790	0.000	0.083	0.535	0.189	0.205	0.115	0.083	0.867	0.017	0.345	0.259	0.027	
US_SUB	0.318	0.276	0.061	0.227	0.129	0.029	0.021	0.011	-0.038	0.145	0.143	0.111	0.103	0.100	0.012	US_SUB
	0.000	0.000	0.231	0.000	0.011	0.572	0.679	0.833	0.458	0.004	0.005	0.029	0.042	0.050	0.820	
YEAR1	-0.032	-0.027	-0.022	-0.016	0.014	0.016	0.089	0.039	-0.004	-0.049	-0.005	0.022	0.127	0.045	0.068	YEAR1
	0.533	0.590	0.659	0.756	0.785	0.751	0.080	0.447	0.933	0.340	0.926	0.670	0.012	0.382	0.182	
AIP/GO	0.121	0.097	-0.020	-0.016	-0.050	0.038	-0.031	0.033	0.038	-0.093	-0.095	-0.018	-0.058	-0.066	0.046	AIP/GO
	0.018	0.056	0.697	0.747	0.330	0.460	0.542	0.514	0.456	0.068	0.063	0.723	0.259	0.193	0.371	
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel B: Pearson correlation coefficients between variables for 2000 (continued)

	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO
BLOCK	1.000															
BIG5	0.052 0.310	1.000														
AUD_SPEC	-0.009 0.865	0.483 0.000	1.000													
ALOCKS	-0.090 0.079	0.217 0.000	0.208 0.000	1.000												
Total assets	-0.067 0.186	0.070 0.170	0.128 0.012	0.242 0.000	1.000											
Subsidiaries	-0.006 0.904	0.143 0.005	0.146 0.004	0.185 0.000	0.295 0.000	1.000										
RESTRUCT	-0.099 0.053	0.103 0.043	0.086 0.090	0.103 0.043	0.165 0.001	0.086 0.092	1.000									
NEWCEO	0.098 0.055	0.004 0.937	-0.036 0.476	0.009 0.859	-0.041 0.420	-0.016 0.750	0.088 0.084	1.000								
NEWISSUE	0.034 0.504	-0.171 0.001	-0.124 0.015	-0.104 0.041	-0.036 0.486	-0.092 0.069	-0.042 0.404	-0.059 0.244	1.000							
NEGROI	-0.019 0.712	0.140 0.006	0.104 0.040	0.049 0.335	0.034 0.500	0.080 0.117	0.016 0.750	-0.007 0.895	-0.156 0.002	1.000						
LEVERAGE	-0.089 0.080	0.050 0.323	0.076 0.136	0.054 0.285	0.080 0.118	0.030 0.561	0.007 0.889	-0.036 0.481	-0.044 0.391	-0.064 0.211	1.000					
NAS_SPEC	-0.057 0.260	0.465 0.000	0.555 0.000	0.157 0.002	0.131 0.010	0.097 0.056	0.055 0.279	-0.002 0.970	-0.164 0.001	0.085 0.095	0.092 0.070	1.000				
US_LIST	0.002 0.962	0.062 0.227	0.135 0.008	0.212 0.000	0.245 0.000	0.218 0.000	0.024 0.643	0.012 0.821	-0.071 0.163	0.029 0.575	0.025 0.626	0.047 0.357	1.000			
US_SUB	-0.089 0.080	0.150 0.003	0.170 0.001	0.203 0.000	0.203 0.000	0.308 0.000	0.131 0.010	-0.028 0.587	-0.044 0.390	0.035 0.494	0.000 0.998	0.107 0.035	0.232 0.000	1.000		
YEAR1	0.022 0.666	0.033 0.516	-0.082 0.107	-0.007 0.898	-0.021 0.683	-0.022 0.665	-0.044 0.384	0.040 0.436	0.019 0.714	0.024 0.636	-0.021 0.681	-0.012 0.814	-0.048 0.347	-0.020 0.689	1.000	
AIP/GO	-0.079 0.121	0.021 0.682	-0.031 0.544	0.005 0.924	0.152 0.003	0.054 0.287	0.003 0.946	-0.003 0.950	-0.125 0.014	0.063 0.213	-0.023 0.647	0.069 0.175	-0.012 0.814	-0.052 0.305	-0.004 0.934	1.000
	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel C: Pearson correlation coefficients between variables for 2001

	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR
Audit	1.000														
APNAS	0.849 0.000	1.000													
NAS_TFEE	0.157 0.002	0.276 0.000	1.000												
B_SIZE	0.428 0.000	0.392 0.000	0.331 0.000	1.000											
B_DSHIP	0.148 0.003	0.125 0.012	0.054 0.280	0.152 0.002	1.000										
B_MEET	0.039 0.439	0.015 0.768	0.103 0.040	-0.038 0.450	0.044 0.375	1.000									
B_FINLIT	0.067 0.182	0.048 0.338	0.016 0.746	0.079 0.116	0.109 0.029	0.031 0.539	1.000								
B_OUTSIDE	0.055 0.274	0.059 0.242	0.134 0.007	0.150 0.003	0.270 0.000	0.108 0.031	0.035 0.479	1.000							
B_CHAIR	0.025 0.611	-0.007 0.884	0.057 0.257	0.062 0.214	0.137 0.006	0.125 0.012	-0.047 0.345	0.508 0.000	1.000						
AC_SIZE	0.155 0.002	0.140 0.005	0.154 0.002	0.405 0.000	0.192 0.000	0.110 0.028	0.032 0.517	0.104 0.037	0.102 0.042	1.000					
A_MSHIP	0.126 0.011	0.092 0.064	0.100 0.045	0.199 0.000	0.662 0.000	0.121 0.015	0.032 0.525	0.202 0.000	0.133 0.008	0.409 0.000	1.000				
A_MEET	0.278 0.000	0.208 0.000	0.202 0.000	0.414 0.000	0.197 0.000	0.225 0.000	0.099 0.048	0.160 0.001	0.119 0.017	0.451 0.000	0.334 0.000	1.000			
A_FINLIT	0.048 0.336	0.041 0.413	0.103 0.038	0.204 0.000	0.076 0.129	0.112 0.025	0.583 0.000	0.070 0.165	0.039 0.439	0.270 0.000	0.270 0.000	0.277 0.000	1.000		
A_OUTSIDE	0.117 0.019	0.113 0.024	0.153 0.002	0.228 0.000	0.219 0.000	0.135 0.007	0.013 0.801	0.542 0.000	0.316 0.000	0.388 0.000	0.477 0.000	0.361 0.000	0.295 0.000	1.000	
A_CHAIR	0.011 0.831	0.033 0.504	0.048 0.334	0.055 0.270	0.062 0.215	-0.043 0.392	-0.039 0.439	0.409 0.000	0.286 0.000	-0.075 0.136	-0.054 0.279	-0.096 0.054	-0.039 0.441	0.309 0.000	1.000
	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel C: Pearson correlation coefficients between variables for 2001 (continued)

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	
BLOCK	-0.012	0.025	-0.048	0.004	-0.060	-0.196	-0.005	-0.116	-0.033	0.011	-0.054	-0.041	0.028	-0.058	-0.056	BLOCK
	0.817	0.620	0.341	0.930	0.232	0.000	0.926	0.020	0.507	0.819	0.283	0.410	0.576	0.250	0.263	
BIG5	0.139	0.121	0.317	0.251	0.077	-0.053	-0.023	0.097	0.012	0.115	0.100	0.183	0.039	0.118	-0.053	BIG5
	0.005	0.015	0.000	0.000	0.123	0.286	0.652	0.053	0.815	0.021	0.045	0.000	0.437	0.018	0.291	
AUD_SPEC	0.201	0.172	0.246	0.233	0.109	-0.029	0.006	0.108	0.062	0.067	0.079	0.184	0.021	0.113	0.042	AUD_SPEC
	0.000	0.001	0.000	0.000	0.029	0.557	0.904	0.030	0.218	0.183	0.115	0.000	0.668	0.023	0.397	
ALOCKS	0.141	0.168	0.153	0.302	0.520	0.007	0.099	0.158	0.077	0.142	0.379	0.282	0.145	0.131	-0.051	ALOCKS
	0.005	0.001	0.002	0.000	0.000	0.886	0.048	0.002	0.125	0.004	0.000	0.000	0.004	0.008	0.308	
Total assets	0.673	0.673	0.138	0.239	0.155	0.042	0.068	0.114	0.069	0.139	0.084	0.185	0.047	0.087	0.033	Total assets
	0.000	0.000	0.005	0.000	0.002	0.406	0.173	0.023	0.167	0.005	0.092	0.000	0.346	0.080	0.505	
Subsidiaries	0.755	0.661	0.161	0.474	0.118	0.006	0.033	-0.034	-0.052	0.186	0.134	0.251	0.048	0.073	-0.081	Subsidiaries
	0.000	0.000	0.001	0.000	0.018	0.909	0.513	0.496	0.301	0.000	0.007	0.000	0.340	0.146	0.107	
RESTRUCT	0.165	0.209	0.130	0.208	0.014	0.024	0.110	0.015	-0.017	0.120	0.037	0.087	0.131	0.088	-0.002	RESTRUCT
	0.001	0.000	0.009	0.000	0.785	0.629	0.028	0.770	0.729	0.016	0.465	0.082	0.009	0.077	0.966	
NEWCEO	-0.001	0.000	0.131	0.164	0.071	0.018	-0.035	0.018	-0.080	0.080	0.110	-0.004	0.006	0.112	0.033	NEWCEO
	0.981	0.997	0.008	0.001	0.154	0.725	0.480	0.719	0.108	0.108	0.027	0.940	0.904	0.025	0.507	
NEWISSUE	-0.018	-0.021	0.083	-0.040	-0.051	0.171	-0.051	0.051	0.036	-0.085	-0.090	-0.064	-0.084	-0.015	0.095	NEWISSUE
	0.713	0.680	0.096	0.430	0.308	0.001	0.309	0.307	0.476	0.090	0.070	0.199	0.095	0.764	0.058	
NEGROI	0.020	0.016	0.071	0.033	0.054	0.022	0.088	-0.039	-0.021	0.043	0.029	0.022	0.066	-0.039	-0.021	NEGROI
	0.693	0.750	0.159	0.506	0.282	0.660	0.078	0.436	0.671	0.392	0.558	0.659	0.187	0.432	0.669	
LEVERAGE	0.122	0.138	-0.001	0.064	0.211	-0.056	-0.071	0.024	0.055	0.048	0.221	0.034	-0.016	0.047	0.049	LEVERAGE
	0.015	0.006	0.977	0.201	0.000	0.263	0.157	0.638	0.275	0.341	0.000	0.495	0.754	0.345	0.323	
NAS_SPEC	0.185	0.199	0.304	0.221	0.110	-0.014	0.004	0.096	0.040	-0.008	0.056	0.130	0.008	0.074	0.066	NAS_SPEC
	0.000	0.000	0.000	0.000	0.028	0.778	0.934	0.054	0.430	0.872	0.266	0.009	0.866	0.137	0.186	
US_LIST	0.310	0.331	0.161	0.167	0.084	0.013	-0.043	0.067	0.035	-0.006	0.051	0.123	-0.042	0.071	0.064	US_LIST
	0.000	0.000	0.001	0.001	0.092	0.792	0.388	0.180	0.480	0.906	0.311	0.014	0.406	0.157	0.202	
US_SUB	0.306	0.270	0.193	0.207	0.071	0.049	0.010	0.024	-0.020	0.078	0.097	0.167	0.058	0.063	-0.045	US_SUB
	0.000	0.000	0.000	0.000	0.157	0.328	0.849	0.635	0.686	0.117	0.052	0.001	0.248	0.207	0.366	
YEAR1	-0.034	-0.028	-0.028	-0.017	-0.031	-0.023	0.012	0.017	0.020	0.061	0.011	0.015	0.016	0.081	0.066	YEAR1
	0.502	0.571	0.578	0.729	0.530	0.648	0.816	0.729	0.693	0.223	0.820	0.761	0.747	0.106	0.190	
AIP/GO	0.215	0.127	0.073	0.036	-0.005	0.074	0.055	0.021	0.055	0.057	0.052	0.122	0.067	0.110	-0.041	AIP/GO
	0.000	0.011	0.147	0.474	0.913	0.139	0.276	0.668	0.271	0.254	0.303	0.014	0.183	0.027	0.410	
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel C: Pearson correlation coefficients between variables for 2001 (continued)

	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO
BLOCK	1.000															
BIG5	-0.019 0.702	1.000														
AUD_SPEC	-0.006 0.912	0.526 0.000	1.000													
ALOCKS	-0.081 0.104	0.245 0.000	0.218 0.000	1.000												
Total assets	-0.037 0.458	0.073 0.145	0.127 0.011	0.173 0.000	1.000											
Subsidiaries	0.010 0.848	0.145 0.004	0.154 0.002	0.159 0.001	0.303 0.000	1.000										
RESTRUCT	-0.029 0.567	-0.006 0.911	-0.013 0.792	-0.006 0.909	0.142 0.004	0.166 0.001	1.000									
NEWCEO	-0.061 0.222	0.047 0.344	0.149 0.003	0.109 0.029	-0.039 0.436	0.038 0.452	0.119 0.017	1.000								
NEWISSUE	-0.111 0.027	-0.069 0.168	0.007 0.889	-0.102 0.041	-0.057 0.252	-0.029 0.566	-0.013 0.801	-0.038 0.450	1.000							
NEGROI	-0.042 0.399	-0.028 0.579	0.047 0.346	0.039 0.434	0.010 0.849	0.026 0.606	0.016 0.754	0.024 0.639	0.024 0.637	1.000						
LEVERAGE	0.051 0.310	-0.018 0.712	0.051 0.304	0.160 0.001	0.273 0.000	0.045 0.372	0.067 0.183	-0.022 0.655	-0.066 0.186	0.014 0.785	1.000					
NAS_SPEC	-0.050 0.315	0.476 0.000	0.735 0.000	0.196 0.000	0.099 0.047	0.157 0.002	0.075 0.133	0.144 0.004	-0.010 0.846	0.041 0.411	0.003 0.950	1.000				
US_LIST	-0.077 0.125	0.069 0.165	0.176 0.000	0.160 0.001	0.250 0.000	0.246 0.000	0.141 0.005	-0.045 0.366	0.057 0.256	0.017 0.730	0.064 0.203	0.207 0.000	1.000			
US_SUB	-0.071 0.154	0.115 0.022	0.082 0.102	0.173 0.001	0.194 0.000	0.297 0.000	0.092 0.064	0.057 0.252	-0.024 0.631	0.036 0.477	0.011 0.820	0.058 0.247	0.297 0.000	1.000		
YEAR1	-0.027 0.589	0.014 0.773	-0.039 0.442	-0.060 0.229	-0.022 0.664	-0.016 0.749	0.017 0.728	0.018 0.721	0.009 0.864	0.010 0.835	-0.006 0.908	0.008 0.868	0.047 0.345	-0.081 0.107	1.000	
AIP/GO	-0.007 0.889	0.081 0.107	0.082 0.099	0.100 0.045	0.161 0.001	0.179 0.000	0.109 0.029	0.002 0.969	-0.154 0.002	0.072 0.147	-0.021 0.670	0.071 0.156	-0.067 0.180	-0.038 0.448	-0.007 0.883	1.000
	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel D: Pearson correlation coefficients between variables for 2002

	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR
Audit	1.000														
APNAS	0.812 0.000	1.000													
NAS_TFEE	0.072 0.142	0.303 0.000	1.000												
B_SIZE	0.458 0.000	0.391 0.000	0.198 0.000	1.000											
B_DSHIP	0.187 0.000	0.168 0.001	0.065 0.189	0.132 0.007	1.000										
B_MEET	0.001 0.987	0.029 0.563	0.040 0.417	-0.058 0.236	0.022 0.649	1.000									
B_FINLIT	0.007 0.883	0.003 0.952	-0.019 0.697	-0.034 0.486	0.043 0.388	0.014 0.783	1.000								
B_OUTSIDE	0.073 0.137	0.061 0.212	0.060 0.225	0.170 0.001	0.291 0.000	-0.008 0.872	-0.006 0.898	1.000							
B_CHAIR	0.006 0.897	0.008 0.864	0.038 0.441	0.009 0.858	0.093 0.060	0.064 0.197	-0.112 0.023	0.468 0.000	1.000						
AC_SIZE	0.229 0.000	0.205 0.000	0.105 0.032	0.440 0.000	0.169 0.001	0.199 0.000	-0.007 0.880	0.119 0.015	0.081 0.098	1.000					
A_MSHIP	0.143 0.004	0.144 0.003	0.150 0.002	0.238 0.000	0.661 0.000	0.132 0.007	0.007 0.894	0.167 0.001	0.050 0.308	0.418 0.000	1.000				
A_MEET	0.291 0.000	0.258 0.000	0.122 0.013	0.386 0.000	0.141 0.004	0.201 0.000	0.061 0.212	0.099 0.043	0.050 0.309	0.452 0.000	0.341 0.000	1.000			
A_FINLIT	-0.005 0.919	0.015 0.761	0.018 0.711	0.104 0.035	-0.054 0.277	0.078 0.114	0.583 0.000	-0.026 0.601	-0.037 0.447	0.189 0.000	0.214 0.000	0.234 0.000	1.000		
A_OUTSIDE	0.150 0.002	0.127 0.010	0.147 0.003	0.264 0.000	0.172 0.000	0.098 0.047	0.062 0.208	0.501 0.000	0.239 0.000	0.423 0.000	0.439 0.000	0.350 0.000	0.327 0.000	1.000	
A_CHAIR	0.029 0.551	-0.010 0.838	-0.007 0.886	0.046 0.355	0.053 0.278	-0.020 0.692	-0.049 0.321	0.422 0.000	0.269 0.000	-0.028 0.564	-0.040 0.423	-0.107 0.030	-0.093 0.059	0.326 0.000	1.000
	Audit	APNAS	NAS_TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUTSIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUTSIDE	A_CHAIR

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel D: Pearson correlation coefficients between variables for 2002 (continued)

	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	
BLOCK	-0.014	0.014	-0.052	-0.009	-0.078	-0.209	-0.070	-0.150	-0.086	-0.036	-0.030	-0.062	-0.019	-0.116	-0.065	BLOCK
	0.769	0.782	0.295	0.859	0.115	0.000	0.155	0.002	0.080	0.471	0.548	0.206	0.694	0.018	0.184	
BIG5	0.147	0.150	0.284	0.214	0.110	-0.087	-0.070	0.084	-0.023	0.084	0.131	0.172	-0.004	0.119	-0.046	BIG5
	0.003	0.002	0.000	0.000	0.025	0.079	0.156	0.087	0.635	0.088	0.008	0.000	0.931	0.016	0.347	
AUD_SPEC	0.177	0.147	0.179	0.178	0.119	-0.078	-0.035	0.093	-0.005	0.107	0.112	0.152	-0.042	0.118	-0.021	AUD_SPEC
	0.000	0.003	0.000	0.000	0.015	0.114	0.473	0.060	0.912	0.029	0.023	0.002	0.392	0.017	0.677	
ALOCKS	0.333	0.289	0.190	0.407	0.601	0.037	0.050	0.220	0.027	0.213	0.407	0.285	0.001	0.167	0.021	ALOCKS
	0.000	0.000	0.000	0.000	0.000	0.453	0.309	0.000	0.578	0.000	0.000	0.000	0.979	0.001	0.666	
Total assets	0.536	0.612	0.082	0.209	0.163	0.085	0.023	0.090	0.032	0.133	0.087	0.193	0.014	0.067	0.027	Total assets
	0.000	0.000	0.095	0.000	0.001	0.084	0.646	0.069	0.511	0.007	0.076	0.000	0.777	0.174	0.580	
Subsidiaries	0.299	0.316	0.174	0.335	0.178	-0.005	-0.001	-0.019	-0.044	0.244	0.216	0.247	0.051	0.088	-0.083	Subsidiaries
	0.000	0.000	0.000	0.000	0.000	0.913	0.981	0.693	0.369	0.000	0.000	0.000	0.298	0.075	0.093	
RESTRUCT	0.107	0.185	0.087	0.064	0.016	0.082	0.089	0.012	0.126	-0.004	0.000	-0.013	0.088	0.002	0.007	RESTRUCT
	0.030	0.000	0.079	0.197	0.739	0.097	0.070	0.804	0.010	0.928	0.999	0.796	0.074	0.971	0.893	
NEWCEO	-0.008	0.016	0.050	0.015	-0.086	0.043	-0.010	0.055	0.019	-0.017	-0.086	0.069	-0.027	0.077	0.064	NEWCEO
	0.871	0.747	0.306	0.763	0.080	0.381	0.842	0.265	0.702	0.734	0.082	0.163	0.584	0.117	0.196	
NEWISSUE	0.037	0.090	0.041	-0.007	0.061	-0.117	0.006	0.028	-0.005	-0.010	0.068	-0.005	-0.033	-0.022	0.077	NEWISSUE
	0.453	0.067	0.407	0.885	0.213	0.018	0.910	0.577	0.923	0.840	0.165	0.925	0.504	0.650	0.119	
NEGROI	0.071	0.065	0.093	0.143	0.125	-0.103	0.073	0.022	0.136	0.121	0.116	0.108	0.069	0.058	0.024	NEGROI
	0.147	0.187	0.059	0.003	0.011	0.035	0.136	0.657	0.006	0.014	0.018	0.028	0.161	0.243	0.621	
LEVERAGE	0.240	0.312	0.046	0.133	0.135	0.175	-0.008	0.097	0.046	0.096	0.141	0.138	0.059	0.092	0.037	LEVERAGE
	0.000	0.000	0.345	0.007	0.006	0.000	0.874	0.049	0.347	0.051	0.004	0.005	0.230	0.062	0.452	
NAS_SPEC	0.139	0.187	0.312	0.151	0.137	-0.040	-0.070	0.139	0.036	0.033	0.149	0.145	-0.032	0.125	0.051	NAS_SPEC
	0.005	0.000	0.000	0.002	0.005	0.420	0.156	0.005	0.467	0.499	0.002	0.003	0.518	0.011	0.300	
US_LIST	0.326	0.358	0.176	0.155	0.122	0.045	-0.065	0.074	-0.008	0.084	0.098	0.117	-0.037	0.104	0.079	US_LIST
	0.000	0.000	0.000	0.002	0.013	0.366	0.188	0.135	0.864	0.086	0.047	0.018	0.449	0.035	0.109	
US_SUB	0.297	0.270	0.139	0.164	0.056	-0.010	0.017	-0.001	-0.035	0.151	0.120	0.149	0.090	0.112	-0.022	US_SUB
	0.000	0.000	0.005	0.001	0.252	0.844	0.731	0.990	0.482	0.002	0.015	0.002	0.067	0.023	0.649	
YEAR1	0.045	-0.013	-0.059	0.044	-0.005	-0.010	0.025	0.007	-0.006	-0.017	0.009	0.022	0.031	0.008	0.044	YEAR1
	0.361	0.785	0.228	0.371	0.913	0.836	0.609	0.894	0.898	0.736	0.852	0.654	0.529	0.865	0.371	
AIP/GO	0.043	0.067	0.024	0.052	0.012	-0.017	0.091	0.050	-0.007	-0.052	-0.064	0.025	-0.006	-0.040	-0.042	AIP/GO
	0.385	0.177	0.626	0.292	0.813	0.727	0.066	0.312	0.879	0.294	0.193	0.610	0.905	0.422	0.399	
	Audit	APNAS	NAS_ TFEE	B_SIZE	B_DSHIP	B_MEET	B_FINLIT	B_OUT SIDE	B_CHAIR	AC_SIZE	A_MSHIP	A_MEET	A_FINLIT	A_OUT SIDE	A_CHAIR	

Cell contents are the Pearson correlation coefficients followed by significance levels.

Table 23 Pearson correlation coefficients for 1999-2002

Panel D: Pearson correlation coefficients between variables for 2002 (continued)

	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO
BLOCK	1.000															
BIG5	0.049 0.316	1.000														
AUD_SPEC	-0.017 0.736	0.557 0.000	1.000													
ALOCKS	-0.119 0.015	0.288 0.000	0.299 0.000	1.000												
Total assets	-0.025 0.613	0.063 0.204	0.084 0.088	0.311 0.000	1.000											
Subsidiaries	-0.015 0.766	0.161 0.001	0.155 0.002	0.287 0.000	0.146 0.003	1.000										
RESTRUCT	0.055 0.264	0.023 0.640	0.003 0.946	0.074 0.133	0.189 0.000	0.021 0.665	1.000									
NEWCEO	-0.080 0.106	0.024 0.628	0.026 0.602	-0.038 0.445	-0.023 0.643	-0.020 0.691	-0.002 0.960	1.000								
NEWISSUE	0.032 0.516	0.081 0.101	0.066 0.180	0.103 0.037	0.082 0.094	0.014 0.773	0.025 0.612	0.017 0.724	1.000							
NEGROI	0.050 0.308	-0.010 0.844	0.085 0.084	0.131 0.008	0.038 0.443	0.084 0.087	0.040 0.422	-0.150 0.002	-0.041 0.411	1.000						
LEVERAGE	-0.040 0.420	0.077 0.120	0.086 0.079	0.177 0.000	0.511 0.000	0.133 0.007	0.113 0.021	-0.032 0.521	0.021 0.664	-0.027 0.589	1.000					
NAS_SPEC	-0.014 0.773	0.543 0.000	0.660 0.000	0.269 0.000	0.089 0.072	0.121 0.014	0.066 0.182	0.030 0.540	0.093 0.059	0.110 0.025	0.053 0.285	1.000				
US_LIST	-0.065 0.188	0.110 0.025	0.150 0.002	0.240 0.000	0.223 0.000	0.215 0.000	0.104 0.035	-0.012 0.811	0.062 0.210	0.001 0.982	0.129 0.009	0.157 0.001	1.000			
US_SUB	-0.092 0.062	0.121 0.013	0.110 0.025	0.164 0.001	0.176 0.000	0.256 0.000	-0.010 0.847	0.005 0.913	0.041 0.404	-0.022 0.655	0.067 0.175	0.103 0.037	0.283 0.000	1.000		
YEAR1	0.058 0.239	0.085 0.085	0.104 0.034	0.014 0.771	-0.029 0.552	0.046 0.354	0.022 0.648	0.025 0.608	-0.075 0.127	-0.086 0.081	-0.054 0.277	0.036 0.467	-0.025 0.617	-0.008 0.868	1.000	
AIP/GO	0.011 0.823	0.028 0.569	0.025 0.617	0.016 0.739	0.072 0.143	0.025 0.608	-0.005 0.921	0.143 0.004	-0.015 0.759	0.074 0.135	0.018 0.717	-0.004 0.939	-0.063 0.200	-0.050 0.311	-0.041 0.404	1.000
	BLOCK	BIG5	AUD_ SPEC	ALOCKS	Total Assets	Sub- sidiaries	RES- TRUCT	NEWCEO	NEW ISSUE	NEGROI	LEV- ERAGE	NAS_ SPEC	US_LIST	US_SUB	YEAR1	AIP/GO

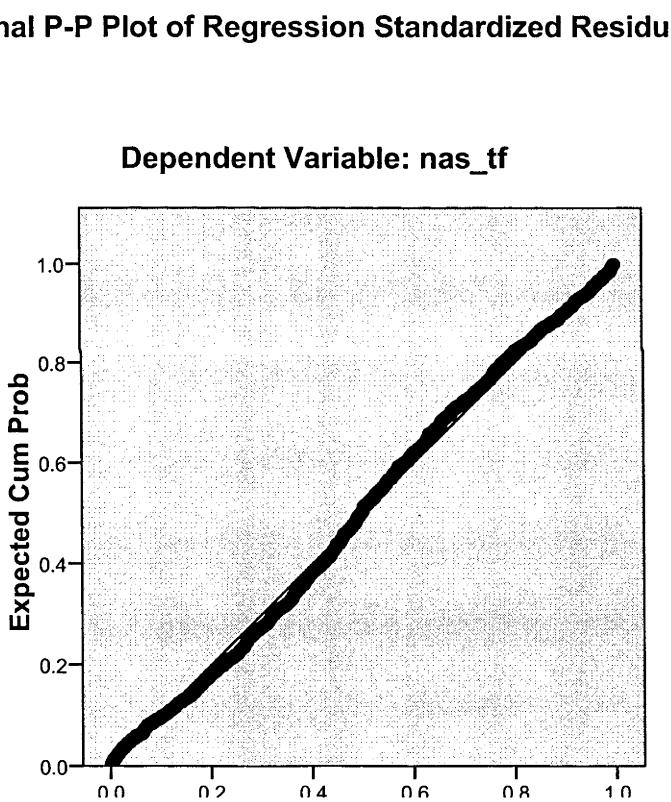
Cell contents are the Pearson correlation coefficients followed by significance levels.

Where:

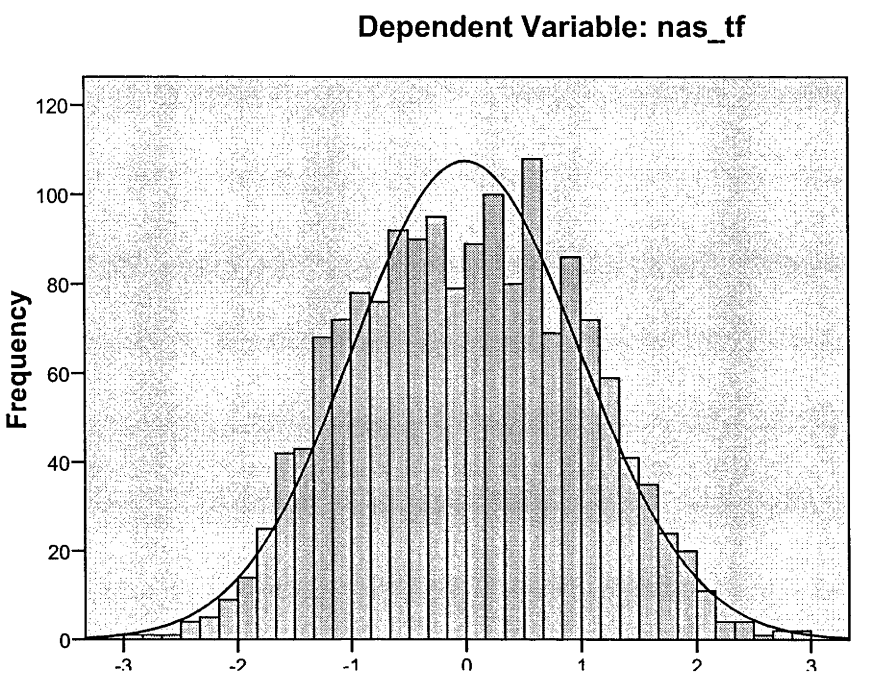
Audit	=	Audit fee ($'000)
APNAS	=	Auditor's remuneration for services other than audit ($'000)
APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIP	=	average number of directorships per outside director
B_MEET	=	sum of the total number board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	Number of members in the audit committee
A_MSHIP	=	average number of audit committee memberships per audit committee member
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors e
A_FINLIT	=	percentage of audit committee member with a financial background
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
Total Assets	=	total assets ($'000)
Subsidiaries	=	the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise
AIP/GO	=	accounting book value of total assets divided by the market value of common equity plus book value of total debt and preferred stock.

A1.2 Probability plot and histogram of base model

The following are the probability plot of the regression's standardized residuals and its histogram for the base model regression of the four years 1999-2002 reported in chapter 5.4. Both indicate the residuals of the regression are close to normally distributed.



Histogram


Dependent Variable: nas_tf
Frequency
120
100
80
60
40
20
0
-3
-2
-1
0
1
2
3
Mean =-1.85E-15
Std. Dev. =0.991
N =1,602

APPENDIX 2: SUPPLEMENTARY TESTS

A2.1 Alternate dependent variable

The dependent variable (APNAS/TFEE) used in this study is the ratio of non-audit fees to the total fees paid to the auditor (sum of non-audit fees and audit fees). This is consistent with the ratio variables used in prior studies such as Frankel et al. (2002) and DeFond et al. (2002).

The dependent variable used in Abbott et al. (2003) however was the ratio of non-audit fees to audit fee (APNAS/AFEE). In addition, earlier studies used levels of APNAS rather than its ratios to audit fee or total fee (such as DeBerg et al. 1991 and Barkess and Simnett 1994). Levels of APNAS focuses on the magnitude of APNAS spending by the firm but fails to control for the scale of the firm which dividing it by either total fee or audit fee does. As a result, it is expected that a lot of the variation in it could be due more to size or complexity differences between firms, which may not be accounted for completely by the control variable. However, for completeness, the natural log of APANS is also used as an alternate dependent variable.

To test the robustness of the results to the different dependent variables, the regression was estimated over the 4-year 1999-2002 pooled sample using alternatively APANS/AFEE and the natural log of APNAS as the dependent variable. The results are listed below in Table 24.

Table 24: Regression results: Various Dependent Variables Regressed on Board and Audit Committee Quality and Independence and Control Variables for the Four Years 1999-2002 Pooled Sample

Dep. Var. $= \alpha + \beta_1$ B_SIZE $+ \beta_2$ B_DSHIPS $+ \beta_3$ B_MEET $+ \beta_4$ B_FINLIT $+ \beta_5$ B_OUTSIDE $+ \beta_6$ B_CHAIR $+ \beta_7$ A_SIZE% $+ \beta_8$ A_MSHIP $+ \beta_9$ A_MEET $+ \beta_{10}$ A_FINLIT $+ \beta_{11}$ A_OUTSIDE $+ \beta_{12}$ A_CHAIR $+ \beta_{13}$ BLOCK $+ \beta_{14}$ BIG5 $+ \beta_{15}$ AUD_SPEC $+ \beta_{16}$ ALOCKS $+ \beta_{17}$ MINING $+ \beta_{18}$ FININCIAL $+ \beta_{19}$ UTILITIES $+ \beta_{20}$ ASSETS $+ \beta_{21}$ ALLSUBS $+ \beta_{22}$ RESTRUCT $+ \beta_{23}$ NEWCEO $+ \beta_{24}$ NEWISSUE $+ \beta_{25}$ NEGROI $+ \beta_{26}$ LEVERAGE $+ \beta_{27}$ NAS_SPEC $+ \beta_{28}$ US_LIST $+ \beta_{29}$ US_SUB $+ \beta_{30}$ YEAR1 $+ \varepsilon$

		Dependent variable used					
	Pred.	**APNAS/TFEE**		**APNAS/AFEE**		**LnAPNAS**	
	Sign.	**Estimate**	**p#**	**Estimate**	**p#**	**Estimate**	**p#**
(Constant) #		0.0010	.988	-0.859	**.072**	-3.316	.000
Board of Directors Variables							
B_SIZE	+	0.0140	**.000**	0.083	**.006**	0.116	**.000**
B_DSHIP	-	-0.0400	**.004**	-0.101	.220	-0.134	.103
B_MEET	-	0.0080	**.000**	0.037	**.002**	0.053	**.000**
B_FINLIT	-	-0.0550	**.056**	-0.375	.106	-0.026	.458
B_OUTSIDE	-	-0.0050	.445	0.013	.484	-0.299	.124
B_CHAIR	-	0.0180	.115	0.184	**.077**	0.093	.185
Audit Committee Variables							
A_SIZE	-	-0.0110	**.026**	-0.066	**.083**	-0.034	.187
A_MSHIP	-	0.0130	.126	0.047	.316	0.079	.159
A_MEET	-	-0.0040	.136	-0.012	.356	0.019	.230
A_FINLIT	-	0.0001	.499	0.266	.106	-0.192	.133
A_OUTSIDE	-	0.0220	.187	0.076	.362	0.405	**.010**
A_CHAIR	-	0.0010	.472	-0.353	**.023**	0.019	.446
Control Variables							
BLOCK_20	-	0.0000	.189	0.004	**.032**	0.000	.402
BIG5	+	0.0990	**.000**	0.268	**.039**	0.803	**.000**
AUD_SPEC #	?	-0.0030	.865	-0.158	.248	0.144	**.096**
ALOCKS	+	0.0070	.103	-0.009	.426	0.001	.488
MINING	-	-0.0460	**.002**	-0.092	.251	-0.600	**.000**
FINANCIAL	-	0.0400	**.020**	0.292	**.039**	-0.152	.128
UTILITIES	-	0.0580	**.013**	1.195	**.000**	0.069	.351
ASSETS	+	0.0150	**.002**	0.082	**.028**	0.369	**.000**
ALLSUBS	+	0.0020	.375	-0.068	**.089**	0.338	**.000**
RESTRUCT	+	0.0530	**.001**	0.710	**.000**	0.570	**.000**
NEWCEO	+	0.0600	**.002**	0.493	**.002**	0.409	**.002**
NEWISSUE	+	0.0420	**.001**	0.124	.138	0.163	**.038**
NEGROI	-	-0.0010	.147	-0.002	.326	-0.009	**.009**
LEVERAGE	-	0.0000	.211	-0.002	.190	-0.001	.319
NAS_SPEC	+	0.0610	**.000**	0.613	**.000**	0.349	**.001**
US_LIST	-	0.0100	.321	0.178	.177	0.077	.310
US_SUB	-	0.0230	.055	0.054	.334	0.324	**.001**
YEAR1 #	?	-0.0570	**.015**	-0.360	**.076**	-0.407	**.006**
Adj R^2		.180		.095		.515	
F statistic		12.695		6.586		57.644	
(significance)		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
APNAS/AFEE	=	non-audit fees / audit fees
Ln(APNAS)	=	natural log of non-audit fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_SIZE%	=	number of audit committee members divided by the number of directors
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

While the regression using APNAS/AFEE is significant (F = 6.586, p = .000), its explanatory power is much lower, at 9.5% compared to the regression using

APNAS/TFEE (whose adjusted R^2 was 18.0%). The significances among the test variables are weaker as well, with the coefficients of B_DSHIP and B_FINLIT losing their significance in the regression using the alternate APNAS/AFEE dependent variable.

The regression using the natural log of APNAS provided a much higher adjusted R^2 (51.5%), which was largely driven by the control variables. The coefficients for B_SIZE and B_MEET remained significant as with the other two regressions, however the other coefficients are no longer significant.

A2.2 Alternate measure of A_SIZE

A_SIZE as defined in the study is the total number of members that sit on the audit committee. It is one of two variables used to proxy for the 'quality' of the audit committee (the other being A_MSHIP) where it is argued that firms with larger audit committees are willing to devote greater resources to the financial accounting process (Anderson et al. 2004).

However, given the differences in size between firms, a three member audit committee in a large firm might not be representative of the same level of governance as a three member audit committee in a small firm. Since the audit committee members are drawn from the board of directors, a possible alternate measure of this construct is to use the ratio of audit committee members to the number of directors in the full board.

Hence,

A_SIZE = number of audit committee members

A_SIZE% = number of audit committee members divided by the number of directors

The main regression was re-estimated using the alternate A_SIZE% variable on the four years 1999-2002 pooled sample. The results can be seen in Table 25. The results are qualitatively similar.

Table 25: Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the Four Years 1999-2002 Pooled Sample with alternate auditor size variable

		Regression using A_SIZE		Regression using A_SIZE%	
	Pred. Sign	Estimate	*p*-value (1-tailed)#	Estimate	*p*-value (1-tailed)#
(Constant) #		0.0010	.988	0.025	.658
Board of Directors Variables					
B_SIZE	+	0.0140	**.000**	0.009	**.011**
B_DSHIP	-	-0.0400	**.004**	-0.041	**.004**
B_MEET	-	0.0080	**.000**	0.008	**.000**
B_FINLIT	-	-0.0550	**.056**	-0.055	**.058**
B_OUTSIDE	-	-0.0050	.445	-0.006	.433
B_CHAIR	-	0.0180	.115	0.017	.122
Audit Committee Variables					
A_SIZE	-	-0.0110	**.026**		
A_SIZE%	-			-0.060	**.023**
A_MSHIP	-	0.0130	.126	0.014	.112
A_MEET	-	-0.0040	.136	-0.004	.138
A_FINLIT	-	0.0001	.499	0.000	.493
A_OUTSIDE	-	0.0220	.187	0.025	.163
A_CHAIR	-	0.0010	.472	0.000	.495
Control Variables					
BLOCK	-	0.0000	.189	0.000	.167
BIG5	+	0.0990	**.000**	0.098	**.000**
AUD_SPEC #	?	-0.0030	.865	-0.003	.860
ALOCKS	+	0.0070	.103	0.007	.107
MINING	-	-0.0460	**.002**	-0.046	**.002**
FINANCIAL	-	0.0400	**.020**	0.040	**.017**
UTILITIES	-	0.0580	**.013**	0.058	**.013**
ASSETS	+	0.0150	**.002**	0.014	**.002**
ALLSUBS	+	0.0020	.375	0.002	.372
RESTRUCT	+	0.0530	**.001**	0.053	**.001**
NEWCEO	+	0.0600	**.002**	0.060	**.002**
NEWISSUE	+	0.0420	**.001**	0.042	**.001**
NEGROI	-	-0.0010	.147	-0.001	.151
LEVERAGE	-	0.0000	.211	0.000	.208
NAS_SPEC	+	0.0610	**.000**	0.062	**.000**
US_LIST	-	0.0100	.321	0.011	.313
US_SUB	-	0.0230	.055	0.023	.054
YEAR1 #	?	-0.0570	**.015**	-0.057	**.016**
Adjusted R^2		.180		.180	
F statistic		12.695		12.702	
(significance)		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:
APNAS/TFEE = non-audit fees / total fees

B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_SIZE%	=	number of audit committee members divided by the number of directors
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

A2.3 Additional testing on sub-samples divided by firm size

As revealed by the descriptive statistics, there are a small percentage of firms significantly larger than the others. An eye-ball examination of a plot of total assets reveals a sharp increase in gradient at about the top 50 and again at the top 10 firms for each year. To see if these firms dominate the results, the 10 largest firms based on total assets are removed from the sample for each year (roughly equating to 2.5% of the firms), and the 4-year pooled 1999-2002 sample were re-estimated. The same is done for the 50 largest firms (approximately 12.5% of the firms). The results are report in Table 26 below.

Removing the 10 largest firms caused no change in which of the test variables are significant. However, B_FINLIT loses its significance after removing the 50 largest firms, suggesting that its effect is concentrated among the largest firms in the sample. The control variables seem to be fairly stable with the exception of ALOCKS which lost its significance when the large firms are removed.

Table 26 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables excluding the largest 10 and 50 companies from each year.

	Pred. Sign.	Full Sample Estimate	p#	Less top 10 Estimate	p#	Less top 50 Estimate	p#
(Constant) #		0.0010	0.988	-0.016	.795	-0.043	.266
Board of Directors Variables							
B_SIZE	+	0.0140	**0.000**	0.015	**.000**	0.017	**.000**
B_DSHIP	-	-0.0400	**0.004**	-0.040	**.005**	-0.043	**.005**
B_MEET	-	0.0080	**0.000**	0.008	**.000**	0.008	**.000**
B_FINLIT	-	-0.0550	**0.056**	-0.050	**.078**	-0.015	.347
B_OUTSIDE	-	-0.0050	0.445	-0.005	.449	-0.013	.374
B_CHAIR	-	0.0180	0.115	0.019	.099	0.017	.148
Audit Committee Variables							
A_SIZE	-	-0.0110	**0.026**	-0.011	**.025**	-0.013	**.012**
A_MSHIP	-	0.0130	0.126	0.013	.134	0.018	.073
A_MEET	-	-0.0040	0.136	-0.004	.176	-0.004	.186
A_FINLIT	-	0.0001	0.499	-0.004	.433	-0.026	.168
A_OUTSIDE	-	0.0220	0.187	0.023	.181	0.023	.195
A_CHAIR	-	0.0010	0.472	-0.001	.487	0.007	.373
Control Variables							
BLOCK_20	-	0.0000	0.189	0.000	.245	0.000	.236
BIG5	+	0.0990	**0.000**	0.097	**.000**	0.094	**.000**
AUD_SPEC #	?	-0.0030	0.865	-0.003	.851	0.001	.481
ALOCKS	+	0.0070	0.103	0.007	.130	0.008	.153
MINING	-	-0.0460	**0.002**	-0.043	**.003**	-0.046	**.004**
FINANCIAL	-	0.0400	**0.020**	0.037	**.033**	0.017	.214
UTILITIES	-	0.0580	**0.013**	0.072	**.003**	0.041	**.081**
ASSETS	+	0.0150	**0.002**	0.015	**.002**	0.017	**.003**
ALLSUBS	+	0.0020	0.375	0.001	.432	0.002	.360
RESTRUCT	+	0.0530	**0.001**	0.050	**.003**	0.054	**.004**
NEWCEO	+	0.0600	**0.002**	0.064	**.001**	0.058	**.005**
NEWISSUE	+	0.0420	**0.001**	0.044	**.001**	0.046	**.001**
NEGROI	-	-0.0010	0.147	-0.001	.142	-0.001	.166
LEVERAGE	-	0.0000	0.211	0.000	.193	0.000	.196
NAS_SPEC	+	0.0610	**0.000**	0.061	**.000**	0.056	**.001**
US_LIST	-	0.0100	0.321	0.014	.270	0.053	**.033**
US_SUB	-	0.0230	0.055	0.026	**.043**	0.028	**.042**
YEAR1 #	?	-0.0570	**0.015**	-0.057	**.017**	-0.048	**.026**
Adj R^2		.180		.169		.149	
F statistic		12.695		11.620		9.179	
(significance)		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:
APNAS/TFEE = non-audit fees / total fees
B_SIZE = number of board members

B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

Abbott et al. (2003) pointed out that company size is strongly associated with both audit and APNAS fees and that audit fees increase as a nonlinear function of size. However, there is no evidence that the association between NAS fees and size is similarly concave. To address this, they included supplementary test by partitioning the sample into two based on the median company size of the full sample.

This is also done below. In addition, due to the largest firms being much bigger in this sample, a second set of sub-samples are used where partition is at the third quartile.

So, the base model regression was estimated for the following sub-samples, firms whose total assets were, (1) greater than the yearly sample median, (2) smaller than the yearly sample median, (3) greater than the yearly sample's third quartile, and (4) smaller than the yearly sample's third quartile. The regression results are recorded in Table 27 below.

The results show some instability across the different sizes sub-samples. It seems that the significance of B_SIZE is largely concentrated on the larger firms, while that of B_FINLIT seems to be driven by the smaller firms. The positive significance of B_MEET is quite uniform throughout the various sub-samples though. On the other hand, the control variables also exhibit some instability across the different size sub-samples.

Table 27 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables on sub-samples divided by size

	Pred sign	Full sample		> median		< median		> 3rd Quartile		< 3rd Quartile	
		Est.	p#	Est.	p#	Est.	p#	Est.	p#	Est.	p#
(Constant) #		0.0010	0.988	-0.003	.976	-0.109	.382	-0.165	.354	-0.080	.345
Board of directors variables											
B_SIZE	+	0.0140	**0.000**	0.010	**.016**	0.019	**.002**	0.005	.181	0.019	**.000**
B_DSHIP	-	-0.0400	**0.004**	-0.068	**.000**	0.004	.438	-0.028	.161	-0.030	**.052**
B_MEET	-	0.0080	**0.000**	0.006	**.004**	0.008	**.000**	0.007	**.028**	0.007	**.000**
B_FINLIT	-	-0.0550	**0.056**	-0.082	**.044**	-0.034	.259	-0.146	**.024**	-0.027	.256
B_OUTSIDE	-	-0.0050	0.445	0.022	.352	-0.007	.442	0.022	.402	-0.026	.266
B_CHAIR	-	0.0180	0.115	0.005	.412	0.028	.091	-0.037	.108	0.031	**.036**
Audit committee variables											
A_SIZE	-	-0.0110	**0.026**	-0.018	**.012**	-0.007	.192	0.011	.183	-0.016	**.006**
A_DSHIP	-	0.0130	0.126	0.023	.078	-0.001	.479	0.022	.144	0.010	.230
A_MEET	-	-0.0040	0.136	-0.005	.169	-0.003	.298	0.001	.427	-0.004	.182
A_FINLIT	-	0.0001	0.499	0.024	.242	-0.036	.159	0.047	.163	-0.021	.240
A_OUTSIDE	-	0.0220	0.187	-0.029	.219	0.063	.042	0.034	.259	0.042	.083
A_CHAIR	-	0.0010	0.472	0.041	.071	-0.031	.161	-0.015	.352	0.002	.470
Control variables											
BLOCK	-	0.0000	0.189	0.000	.498	0.000	.273	0.000	.433	0.000	.124
BIG5	+	0.0990	**0.000**	0.158	**.000**	0.051	**.015**	0.404	**.000**	0.077	**.000**
AUD_SPEC #	?	-0.0030	0.865	-0.044	**.028**	0.053	**.033**	-0.062	**.026**	0.016	.419
ALOCKS	+	0.0070	0.103	0.014	**.013**	-0.008	.259	0.006	.191	0.004	.319
MINING	-	-0.0460	**0.002**	-0.028	.109	-0.055	**.008**	-0.068	**.012**	-0.039	**.020**
FINANCIAL	-	0.0400	**0.020**	0.052	**.024**	0.033	.134	0.097	**.011**	0.029	.104
UTILITIES	-	0.0580	**0.013**	0.059	**.046**	0.067	**.048**	0.083	**.039**	0.043	**.086**
ASSETS	+	0.0150	**0.002**	0.019	**.013**	0.018	**.060**	0.011	.212	0.018	**.008**
ALLSUBS	+	0.0020	0.375	0.004	.304	0.000	.488	-0.013	.111	0.008	.120
RESTRUCT	+	0.0530	**0.001**	0.042	**.025**	0.094	**.001**	0.035	**.088**	0.073	**.001**
NEWCEO	+	0.0600	**0.002**	0.070	**.003**	0.026	.208	0.053	**.061**	0.051	**.020**
NEWISSUE	+	0.0420	**0.001**	0.045	**.008**	0.038	**.023**	0.034	**.096**	0.044	**.002**
NEGROI	-	-0.0010	0.147	-0.073	.283	-0.001	.145	-0.720	**.071**	-0.001	.141
LEVERAGE	-	0.0000	0.211	0.000	.182	-0.001	.206	-0.001	.420	0.000	.170
NAS_SPEC	+	0.0610	**0.000**	0.073	**.000**	0.041	**.053**	0.082	**.001**	0.053	**.004**
US_LIST	-	0.0100	0.321	-0.033	.117	0.110	**.002**	-0.005	.431	0.063	**.028**
US_SUB	-	0.0230	0.055	-0.003	.435	0.061	**.003**	0.018	.239	0.035	**.028**
YEAR1 #	?	-0.0570	**0.015**	-0.080	**.012**	-0.034	.332	-0.093	**.042**	-0.045	.103
Adj R^2		.180		.175		.138		.218		.142	
F statistic		12.695		6.670		5.273		4.721		7.613	
(significance)		.000		.000		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE = non-audit fees / total fees

B_SIZE = number of board members

B_DSHIPS = average number of directorships by outside directors on the board

B_MEET = sum of the total number of board meetings attended by each director divided by the number of directors

B_FINLIT = percentage of outside directors with a financial background on the board

B_OUTSIDE = percentage of outside directors on the board

B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

A2.4 Excluding firms that had Andersen as auditors

It is possible that the integration of Andersen in Australia and Ernst and Young might have confounding effects on the regression on the 2002 sample. A brief timeline of the integration was published by Ernst and Young in a media release (Ernst and Young 2002)

- March 28 2002 Ernst & Young and Andersen announced they had signed a memorandum of understanding to pursue integration talks
- April 26 2002 an Implementation Agreement was signed giving formal effect to the MOU
- May 16 2002 voting process complete
- May 17 2002 votes counted
- May 27 2002 set as integration day.

To remove any potential confounding effects, the 2002 regression was re-estimated using the reduced sample by removing all firms that were audited by Andersen in 2001. It is possible that the reduced sample may have a bias if the audit firm seeks a particular type of auditee or if a particular type of firm seeks them as an auditor. In total, 44 firms were identified as having Andersen as auditor in 2001, from a full sample of 414 firms, leave a testing sample of 370 firms.

The results of the regression are shown below in Table 28.

Table 28: Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for 2002 using reduced sample removing firms audited by Andersen

$$APNAS/TFEE = \alpha + \beta_1 B\_SIZE + \beta_2 B\_DSHIPS + \beta_3 B\_MEET + \beta_4 B\_FINLIT + \beta_5 B\_OUTSIDE + \beta_6 B\_CHAIR + \beta_7 A\_SIZE\% + \beta_8 A\_MSHIP + \beta_9 A\_MEET + \beta_{10} A\_FINLIT + \beta_{11} A\_OUTSIDE + \beta_{12} A\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

		Full sample		Less audited by AA	
	Pred. Sign	Estimate	*p*-value (1-tailed)#	Estimate	*p*-value (1-tailed)#
(Constant) #		0.2594	**.035**	0.2588	**.050**
Board of Directors Variables					
B_SIZE	+	0.0106	**.089**	0.0112	.105
B_DSHIP	-	-0.0680	**.025**	-0.0784	**.017**
B_MEET	-	0.0031	.134	0.0027	.174
B_FINLIT	-	-0.0166	.406	-0.0141	.426
B_OUTSIDE	-	-0.0589	.215	-0.0582	.229
B_CHAIR	-	0.0264	.192	0.0248	.223
Audit Committee Variables					
A_SIZE	-	-0.0076	.259	-0.0080	.264
A_MSHIP	-	0.0464	**.040**	0.0432	.069
A_MEET	-	-0.0100	.105	-0.0132	**.060**
A_FINLIT	-	-0.0316	.262	-0.0258	.314
A_OUTSIDE	-	0.0586	.123	0.0600	.134
A_CHAIR	-	-0.0372	.197	-0.0566	.109
Control Variables					
BLOCK	-	-0.0002	.359	-0.0003	.292
BIG5	+	0.1125	**.001**	0.1090	**.002**
AUD_SPEC #	?	-0.0738	**.028**	-0.0594	**.099**
ALOCKS	+	0.0103	.191	0.0145	.134
MINING	-	-0.0046	.439	-0.0258	.215
FINANCIAL	-	0.0986	**.005**	0.0846	**.018**
UTILITIES	-	-0.0039	.477	-0.0173	.413
ASSETS	+	0.0015	.442	0.0069	.265
ALLSUBS	+	0.0090	.208	0.0058	.319
RESTRUCT	+	0.0457	.151	0.0401	.197
NEWCEO	+	0.0847	**.091**	0.0756	.138
NEWISSUE	+	0.0003	.495	-0.0004	.494
NEGROI	-	0.0699	.149	0.0527	.230
LEVERAGE	-	-0.0055	.249	-0.0075	.185
NAS_SPEC	+	0.1292	**.000**	0.1116	**.001**
US_LIST	-	0.0846	**.024**	0.1096	**.009**
US_SUB	-	0.0348	.109	0.0298	.165
YEAR1 #	?	-0.0483	.119	-0.0243	.638
Adjusted R^2		.148		.150	
F statistic		3.382		3.168	
(significance)		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

The explanatory power of the regression improved very slightly from 14.8% to 15%.

Among the test variables, B_SIZE and A_MSHIP which was significant in the full sample regression (p = .089, one-tailed; p = .081, two-tailed) lost its significance after the Andersen firms were removed (p = .105, one-tailed; p = .139, two-tailed). On the other hand, A_MEET which was insignificant in the full sample regression (p = .105, one-tailed) is negatively significant (p = .060, one-tailed).

There was no change in the control variables except NEWCEO lost its significance after the Andersen firms were removed.

The change in significance among the test variable is cause for concern given the small number of firms deleted from the sample. To compare the firms audited by Andersen with the other firms, Table 29 shows the descriptive statistics for the full sample of 2002 firms, as well as two sub-samples, one with the firms audited by Andersen in 2001 removed, and one comprising only of firms that were audited by Andersen in 2001.

The firms that were audited by Andersen in 2001 generally had higher fees for both audit and non-audit services (as well as greater variance), with the ration of APNAS/TFEE slightly lower than other firms. Their boards are slightly weaker being larger and less financially literate but otherwise fairly similar to firms audited by other auditors. The audit committee on the other hand tend to be stronger with its members tending to have more multiple audit committee memberships, met more often, more financially literate, and a greater percentage of whom are independent.

The firms themselves were generally slightly bigger in terms of its total assets, and have lower leverage. The auditor they switched to in 2002 (most but not all being Ernst and Young) tend to be specialists in the industry for audit and APNAS which isn't surprising. Those audited by Andersen in 2001 also had proportionally greater number of CEO changes, whose removal might be the cause of the lost of significance in the new restricted regression.

Table 29 Descriptive statistics for 2002

	Full sample (n = 414)		Less firms audited by Andersen in 2001 (n =3 70)		Only firms audited by Andersen in 2001 (n = 44)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Audit ^	402.350	1052.5	376.618	838.9	618.734	2132.2
APNAS ^	503.589	1476.6	490.534	1297.2	613.375	2547.2
APNAS/TFEE	0.41608	0.2425	0.41928	0.2470	0.38916	0.2011
B_SIZE	6.19807	2.0023	6.11892	1.9372	6.86364	2.4073
B_DSHIPS	1.59199	0.5752	1.59165	0.5867	1.59487	0.4734
B_MEET	10.7744	4.5537	10.7751	4.6607	10.7688	3.5725
B_FINLIT	0.44795	0.2266	0.45402	0.2238	0.39690	0.2459
B_OUTSIDE	0.63361	0.2149	0.62953	0.2182	0.66788	0.1831
B_CHAIR*	0.74155	0.4383	0.73514	0.4419	0.79546	0.4080
AC *	0.91546	0.2785	0.90541	0.2931	1	0
A_SIZE	2.82609	1.2482	2.80541	1.2878	3	0.8352
A_MSHIP	1.34661	0.7316	1.33260	0.7416	1.46439	0.6370
A_MEET	2.91116	1.7926	2.86828	1.8147	3.27167	1.5667
A_FINLIT	0.50589	0.3297	0.50195	0.3291	0.53901	0.3362
A_OUTSIDE	0.71556	0.3434	0.70557	0.3513	0.79962	0.2553
A_CHAIR *	0.89614	0.3055	0.89189	0.3109	0.93182	0.2550
BLOCK	41.6456	22.76747	41.5654	22.899	42.3199	21.870
BIG5 *	0.80676	0.3953	0.78649	0.4103	0.97727	0.1508
AUD_SPEC *	0.57488	0.4950	0.54054	0.4990	0.86364	0.3471
ALOCKS	0.92512	1.4062	0.89189	1.3946	1.20454	1.4876
MINING *	0.22947	0.421	0.23243	0.4229	0.20454	0.4080
FINANCIAL *	0.16425	0.3710	0.17027	0.3764	0.11363	0.3210
UTILITIES *	0.03140	0.1746	0.02702	0.1624	0.06818	0.2550
Total Assets ^	3,294,113	24,547,582	3,419,023	25,708,813	2,243,728	10,701,875
Subsidiaries	28.9008	56.443	28.8946	58.524	28.9546	34.749
RESTRUCT *	0.07488	0.2635	0.07836	0.2691	0.04546	0.2107
NEWCEO *	0.03382	0.1810	0.03243	0.1774	0.04546	0.2107
NEWISSUE *	0.31401	0.4647	0.31892	0.4667	0.27273	0.4505
NEGROI	-0.05762	0.1852	-0.0572	0.1867	-0.0612	0.1748
LEVERAGE	0.49596	1.4758	0.51594	1.5477	0.32792	0.5756
NAS_SPEC *	0.56280	0.4966	0.54595	0.4986	0.70455	0.4615
US_LIST *	0.08937	0.2856	0.09189	0.2893	0.06818	0.2550
US_SUB *	0.27295	0.4460	0.27297	0.4460	0.27273	0.4505
YEAR1 *	0.16425	0.3710	0.06487	0.2466	1	0
AIP/GO	0.88627	0.7789	0.88750	0.8151	0.87595	0.3545

^ the mean, medians, and quartiles of these variables are expressed at ($'000)

Where:

Audit	=	Audit fee ($'000)
APNAS	=	Auditor's remuneration for services other than audit ($'000)
APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIP	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background

B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	Number of members in the audit committee
AC	=	1 if the company has an audit committee; 0 otherwise
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
Total Assets	=	total assets ($'000)
Subsidiaries	=	the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

A2.5 Additional testing for model with only audit committee variables

In section 5.7.2, a regression model with only audit committee variables was used. Because those regressions focused on the audit committee, firms without audit committees were deleted from the sample.

As an alternative, the full sample is used but the model was modified to include a dummy variable which equalled 1 if the firm had an audit committee and 0 otherwise.

The results of the regression on the 4-year pooled sample are reported in Table 30 below. They are qualitatively similar to the regression with the no audit committee firms removed. However, unexpectedly the coefficient for AC is positive relating the presence of an audit committee to higher relative APNAS spending. A possible reason for this might be uncontrolled relationship between APNAS/TFEE and the size of the board of directors, whose coefficient is highly significant and positive in the full model, with a small board being the most often used reason for not having an audit committee. Or it could be that the firms without audit committees were less complex firms that had a lower demand for NAS.

Table 30 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Audit Committee Quality and Independence and Control Variables for the 1999-2002 pooled sample

$$APNAS/TFEE = \alpha + \beta_1 AC + \beta_7 A\_SIZE + \beta_8 A\_MSHIP + \beta_9 A\_MEET + \beta_{10} A\_FINLIT + \beta_{11} A\_OUTSIDE + \beta_{12} A\_CHAIR + \beta_{13} BLOCK + \beta_{14} BIG5 + \beta_{15} AUD\_SPEC + \beta_{16} ALOCKS + \beta_{17} MINING + \beta_{18} FININCIAL + \beta_{19} UTILITIES + \beta_{20} ASSETS + \beta_{21} ALLSUBS + \beta_{22} RESTRUCT + \beta_{23} NEWCEO + \beta_{24} NEWISSUE + \beta_{25} NEGROI + \beta_{26} LEVERAGE + \beta_{27} NAS\_SPEC + \beta_{28} US\_LIST + \beta_{29} US\_SUB + \beta_{30} YEAR1 + \varepsilon$$

	Predicted Sign	Estimate	T Statistic	*p*-value (1-tailed)#
(Constant) #		-0.0373	-0.6774	.498
Audit Committee Variables				
AC	-	0.1318	3.2384	**.001**
A_SIZE	-	-0.0146	-2.2033	**.014**
A_MSHIP	-	-0.0164	-1.8373	**.033**
A_MEET	-	-0.0008	-0.2194	.413
A_FINLIT	-	-0.0331	-1.6795	**.047**
A_OUTSIDE	-	-0.0003	-0.0131	.495
A_CHAIR	-	0.0217	1.0469	.148
Control Variables				
BLOCK	-	0.0000	-0.1724	.432
BIG5	+	0.1015	5.7177	**.000**
AUD_SPEC #	?	-0.0073	-0.4583	.647
ALOCKS	+	0.0026	0.5181	.302
MINING	-	-0.0476	-3.0164	**.001**
FINANCIAL	-	0.0218	1.1916	.117
UTILITIES	-	0.0701	2.6846	**.004**
ASSETS	+	0.0195	4.0879	**.000**
ALLSUBS	+	0.0053	0.9208	.179
RESTRUCT	+	0.0653	3.6924	**.000**
NEWCEO	+	0.0596	2.9157	**.002**
NEWISSUE	+	0.0498	3.7487	**.000**
NEGROI	-	-0.0008	-1.4986	**.067**
LEVERAGE	-	-0.0002	-0.8301	.203
NAS_SPEC	+	0.0670	4.1919	**.000**
US_LIST	-	0.0123	0.5483	.292
US_SUB	-	0.0182	1.2436	.107
YEAR1 #	?	-0.0590	-2.4872	**.013**
	Adjusted R^2		.160	
	F statistic		13.212	
	(significance)		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
AC	=	1 if the company has an audit committee; 0 otherwise
A_SIZE	=	number of audit committee members

A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

A2.6 Sensitivity testing for substitution hypothesis: using thirds to divide the sub-sample

In chapter 5.8, the 1999-2002 4-year pooled sample was divided into quartiles ranked on AIP/GO for each year. Three sub-samples were created with the high GO sub-sample containing all the firms that were in the smallest quartiles, the moderate sub-sample the middle two quartiles, and the high AIP sub-sample being the largest quartiles. Separate regression analysis was then carried out on each of the three sub-samples.

As an alternative, the sample is divided into three equal samples instead. The regression results on the three sub-samples are recorded in Table 31 below.

Table 31 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for the Four Years 1999-2002 Pooled Sample ranked on AIP/GO and broken down into 3 sub-samples using thirds.

	Pred. Sign.	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		-0.0874	.487	-0.1489	.272	-0.0268	.819
Board of Directors Variables							
B_SIZE	-,+,-	0.0214	**.006**	0.0160	**.029**	0.0021	.390
B_DSHIP	+,-,+	-0.0023	.474	-0.0197	.263	-0.0448	**.049**
B_MEET	+,-,+	0.0095	**.005**	0.0117	**.000**	0.0058	**.016**
B_FINLIT	+,-,+	0.0565	.249	-0.0925	**.082**	-0.1884	**.003**
B_OUTSIDE	+,-,+	0.1497	**.030**	0.0271	.366	-0.1485	**.020**
B_CHAIR	+,-,+	-0.0105	.376	0.0241	.203	0.0333	.133
Audit Committee Variables							
A_SIZE	+,-,+	0.0080	.263	-0.0238	**.012**	0.0026	.403
A_MSHIP	+,-,+	-0.0114	.308	-0.0165	.257	0.0038	.434
A_MEET	+,-,+	-0.0051	.295	-0.0105	**.056**	-0.0010	.442
A_FINLIT	+,-,+	-0.0993	**.035**	0.0088	.429	0.1124	**.011**
A_OUTSIDE	+,-,+	0.0098	.432	0.0120	.403	-0.0331	.250
A_CHAIR	+,-,+	-0.0686	.079	0.0265	.228	0.0822	**.023**
Control Variables							
BLOCK_20	-	0.0013	**.010**	-0.0011	**.020**	0.0008	.051
BIG5	+	0.0474	.111	0.0918	**.004**	0.1366	**.000**
AUD_SPEC #	?	0.0082	.818	-0.0066	.833	0.0416	.162
ALOCKS	+	0.0027	.428	-0.0041	.359	0.0184	**.026**
MINING	-	-0.0699	**.036**	-0.0383	.139	-0.0606	**.024**
FINANCIAL	-	0.0349	.228	0.0439	.157	0.0200	.295
UTILITIES	-	0.0094	.417	0.0972	**.028**	0.2261	**.000**
ASSETS	+	0.0088	.236	0.0311	**.009**	0.0200	**.029**
ALLSUBS	+	0.0077	.290	-0.0004	.489	-0.0033	.382
RESTRUCT	+	0.0933	**.014**	0.0133	.341	0.0413	**.086**
NEWCEO	+	0.0695	**.057**	0.0846	**.010**	0.0386	.128
NEWISSUE	+	0.0453	**.054**	0.0575	**.023**	0.0675	**.011**
NEGROI	-	-0.0006	.172	-0.2233	**.028**	0.0316	.376
LEVERAGE	-	-0.0004	.381	0.0004	.465	-0.0001	.340
NAS_SPEC	+	0.0375	.153	0.0215	.243	0.0662	**.014**
US_LIST	-	-0.0006	.495	-0.0533	.111	0.0678	.101
US_SUB	-	0.0293	.165	0.0397	.098	-0.0001	.499
YEAR1 #	?	-0.1043	.139	-0.0805	.382	-0.0685	.251
Adj R^2		.162		.201		.299	
F statistic		3.538		4.317		6.614	
(significance)		.000		.000		.000	

* Firms are ranked on AIP/GO, the smallest third being High GO, middle third being Moderate, and the largest third being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise
AIP/GO	=	Accounting book value of total assets divided by the sum of the market value of common equity and the book value of total debt and preferred stock.

The following is a comparison of the results with those of the quartile sub-samples in chapter 5.8.

Among the board variables, the significance of B_SIZE, B_MEET, and B_OUTSIDE are unchanged, as is the insignificance of B_CHAIR. However, the negative significance of B_DSHIP has moved from the quartile moderate sub-sample to the thirds high AIP sub-sample, which does not support the substitution hypothesis. In addition, the coefficient of B_FINLIT in the thirds moderate sub-sample is significant and negative as expected (p = .082, one-tailed) whereas it was insignificant in the quartile moderate sub-sample.

Among the audit committee variables, A_SIZE maintained its significance only in the moderate sub-sample in both sets of regression, and A_MSHIP is insignificant in all sub-samples. A_MEET on the other hand is significant and negative as expected in the thirds moderate sub-sample, despite being insignificant in all sub-samples when they were divided by quartiles.

Finally, A_FINLIT and A_CHAIR were both consistently positive and significant in the high AIP sub-samples in both sets of regression as expected. However in the high GO sub-sample, A_CHAIR was significant though unexpectedly negative when the sub-samples were divided using quartiles, but insignificant when it was done in thirds. Yet the opposite was found for A_FINLIT, with the coefficient negative and significant in the thirds high GO sub-sample and insignificant in the corresponding quartiles sub-sample.

The instability of the results also shows that the regression is quite sensitive to the sample make-up. However, both sets of results do provide only very isolated support

for the substitution hypothesis being dominant in the extreme levels of growth options and assets in place.

Additionally, the control variables showed several differences in results as well, suggesting that the instability of the results was not restricted to the test variable.

A2.7 Additional analysis for the substitution hypothesis: yearly regressions

In chapter 5.8, the 1999-2002 4-year pooled sample was divided into quartiles ranked on AIP/GO for each year. Three sub-samples were created with the high GO sub-sample containing all the firms that were in the smallest quartiles, the moderate sub-sample the middle two quartiles, and the high AIP sub-sample being the largest quartiles. Separate regression analysis was then carried out on each of the three sub-samples.

Additional regressions are carried out for each of the four years 1999-2002. The results are in Table 32 below. Several of the regressions are insignificant with very low adjusted R^2s, possibly due in part to the much smaller sample sizes. In particular, the high growth options sub-sample for 1999 ($F = 1.112$; adj $R^2 = 3.3\%$) and the high assets-in-place sub-samples for 2000 ($F = 1.362$; adj $R^2 = 10.2\%$) and 2002 ($F = 1.038$; adj $R^2 = 1.1\%$).

Table 32 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for each of the four years 1999-2002 Pooled Sample ranked on AIP/GO and broken down into 3 sub-samples using quartiles.

Panel A: Regression results for 1999

	Pred. Sign.	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		-0.0065	.982	-0.0927	.609	-0.1953	.476
Board of Directors Variables							
B_SIZE	-,+,-	0.0275	.065	0.0137	**.093**	-0.0162	.152
B_DSHIP	+,-,+	-0.0424	.310	-0.0629	**.042**	0.0182	.368
B_MEET	+,-,+	0.0016	.428	0.0162	**.000**	0.0033	.270
B_FINLIT	+,-,+	0.0221	.459	-0.0247	.396	-0.1963	.091
B_OUTSIDE	+,-,+	0.0625	.390	-0.0955	.183	0.0400	.391
B_CHAIR	+,-,+	-0.0319	.348	0.0469	.125	-0.0100	.446
Audit Committee Variables							
A_SIZE	+,-,+	0.0043	.442	-0.0202	**.074**	0.0450	**.046**
A_MSHIP	+,-,+	-0.0286	.328	0.0076	.355	0.0123	.408
A_MEET	+,-,+	-0.0221	.172	-0.0108	.102	-0.0095	.279
A_FINLIT	+,-,+	-0.0226	.430	-0.0710	.152	0.1141	.141
A_OUTSIDE	+,-,+	-0.0013	.496	0.0423	.247	-0.1076	.172
A_CHAIR	+,-,+	-0.1235	.145	0.0563	.135	0.0862	.207
Control Variables							
BLOCK_20	-	0.0019	.084	-0.0008	.147	0.0008	.268
BIG5	+	0.0056	.476	0.0704	**.062**	0.1138	**.060**
AUD_SPEC #	?	0.0105	.901	0.0921	**.026**	0.1840	**.018**
ALOCKS	+	0.0412	.141	0.0166	.104	-0.0004	.493
MINING	-	0.0012	.495	-0.0166	.354	-0.0731	.128
FINANCIAL	-	0.0425	.347	-0.0021	.486	-0.0146	.429
UTILITIES	-	0.2402	**.012**	0.2221	**.002**	0.2909	**.049**
ASSETS	+	0.0210	.219	0.0279	**.044**	0.0251	.156
ALLSUBS	+	-0.0091	.384	0.0009	.478	0.0070	.399
RESTRUCT	+	0.0990	.203	-0.0523	.108	0.0577	.204
NEWCEO	+	-0.0349	.384	0.1941	**.010**	0.0399	.334
NEWISSUE	+	0.0755	.163	-0.0129	.370	0.1178	**.050**
NEGROI	-	-0.0014	**.064**	-0.0649	.325	-0.0980	.342
LEVERAGE	-	0.0004	.412	-0.0002	.244	0.0110	.373
NAS_SPEC	+	0.0596	.245	-0.0706	.054	-0.0915	.117
US_LIST	-	-0.1824	**.050**	0.0090	.445	0.1707	.083
US_SUB	-	0.0451	.257	0.0570	.089	-0.1066	.139
YEAR1 #	?	-0.1365	.346	-0.1161	.244	0.0541	.742
Adj R^2		.033		.275		.187	
F statistic		1.112		3.518		1.758	
(significance)		.350		.000		.028	

* Firms are ranked on AIP/GO, the smallest third being High GO, middle third being Moderate, and the largest third being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Table 32 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for each of the four years 1999-2002 Pooled Sample ranked on AIP/GO and broken down into 3 sub-samples using quartiles.

Panel B: Regression results for 2000

	Pred. Sign.	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		-0.5401	.143	-0.0179	.931	0.1296	.675
Board of Directors Variables							
B_SIZE	-,+,-	0.0682	**.004**	0.0034	.393	-0.0022	.450
B_DSHIP	+,-,+	0.0904	.153	-0.0343	.248	-0.0279	.374
B_MEET	+,-,+	0.0174	**.019**	0.0050	.145	0.0053	.214
B_FINLIT	+,-,+	-0.0321	.434	-0.2164	**.022**	0.0403	.415
B_OUTSIDE	+,-,+	0.2922	.105	-0.0867	.237	-0.1814	.173
B_CHAIR	+,-,+	-0.0456	.303	0.0271	.271	0.1050	**.097**
Audit Committee Variables							
A_SIZE	+,-,+	0.0132	.334	-0.0271	**.039**	0.0098	.380
A_MSHIP	+,-,+	-0.0788	.146	0.0004	.496	-0.0202	.390
A_MEET	+,-,+	0.0074	.374	-0.0041	.322	0.0050	.402
A_FINLIT	+,-,+	-0.1314	.171	0.0211	.388	0.0420	.373
A_OUTSIDE	+,-,+	0.0313	.422	0.0010	.495	0.0609	.314
A_CHAIR	+,-,+	-0.1058	.179	0.0600	.115	0.0174	.442
Control Variables							
BLOCK_20	-	0.0014	.178	-0.0002	.404	0.0016	.108
BIG5	+	0.0190	.420	0.1521	**.004**	0.1611	**.052**
AUD_SPEC #	?	-0.0453	.589	-0.0851	**.056**	-0.0165	.838
ALOCKS	+	-0.0225	.304	0.0091	.312	0.0390	**.092**
MINING	-	-0.1325	**.093**	-0.1503	**.005**	-0.1032	.102
FINANCIAL	-	0.0296	.390	0.0427	.249	-0.0196	.424
UTILITIES	-	0.0297	.378	0.1029	.144	0.2140	.087
ASSETS	+	0.0225	.266	0.0318	**.053**	-0.0048	.428
ALLSUBS	+	-0.0375	.173	0.0090	.317	0.0036	.454
RESTRUCT	+	0.1916	**.021**	0.0998	**.007**	0.0509	.264
NEWCEO	+	0.0289	.390	0.0838	**.044**	0.0697	.205
NEWISSUE	+	0.0379	.300	0.0865	**.021**	0.0864	.142
NEGROI	-	-0.0473	.265	-0.0080	.481	-0.1112	.372
LEVERAGE	-	0.0073	.332	-0.0047	.109	0.0188	.199
NAS_SPEC	+	-0.0157	.427	0.1040	**.007**	0.0903	.140
US_LIST	-	0.1034	.168	-0.1168	**.041**	0.0346	.396
US_SUB	-	-0.0113	.439	0.0172	.342	0.0043	.478
YEAR1 #	?	-0.0155	.928	0.0545	.741	-0.2946	.102
Adj R^2		.206		.222		.102	
F statistic		1.828		2.824		1.362	
(significance)		.021		.000		.148	

* Firms are ranked on AIP/GO, the smallest third being High GO, middle third being Moderate, and the largest third being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Table 32 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for each of the four years 1999-2002 Pooled Sample ranked on AIP/GO and broken down into 3 sub-samples using quartiles.

Panel C: Regression results for 2001

	Pred. Sign.	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		-0.1407	.608	-0.0602	.739	-0.1812	.531
Board of Directors Variables							
B_SIZE	-,+,-	0.0395	**.025**	0.0101	.167	0.0154	.187
B_DSHIP	+,-,+	0.0170	.407	-0.0330	.220	-0.0059	.466
B_MEET	+,-,+	0.0006	.468	0.0036	.225	0.0083	.159
B_FINLIT	+,-,+	0.1633	.145	0.0184	.422	-0.2516	.054
B_OUTSIDE	+,-,+	0.2260	**.082**	0.2831	**.003**	-0.3917	**.019**
B_CHAIR	+,-,+	0.0672	.130	-0.0373	.180	-0.0495	.257
Audit Committee Variables							
A_SIZE	+,-,+	0.0063	.408	0.0122	.219	0.0121	.319
A_MSHIP	+,-,+	-0.0352	.288	0.0096	.400	-0.0380	.279
A_MEET	+,-,+	0.0111	.339	0.0074	.261	-0.0152	.213
A_FINLIT	+,-,+	-0.0244	.412	-0.0485	.241	0.2205	**.020**
A_OUTSIDE	+,-,+	0.0844	.239	-0.0892	.109	0.0537	.305
A_CHAIR	+,-,+	-0.1671	.076	0.0543	.174	0.1676	**.024**
Control Variables							
BLOCK_20	-	0.0018	.076	-0.0005	.271	-0.0001	.456
BIG5	+	0.0173	.412	0.1778	**.000**	0.1371	**.051**
AUD_SPEC #	?	-0.0836	.410	-0.0289	.562	-0.0511	.448
ALOCKS	+	-0.0207	.231	-0.0016	.463	0.0188	.181
MINING	-	0.0018	.491	-0.0465	.163	-0.0316	.332
FINANCIAL	-	-0.1545	**.056**	0.0375	.269	-0.0793	.176
UTILITIES	-	-0.1387	**.096**	-0.0300	.310	0.3095	.021
ASSETS	+	-0.0015	.480	0.0052	.387	0.0363	**.084**
ALLSUBS	+	0.0238	.203	0.0081	.332	-0.0198	.205
RESTRUCT	+	-0.1982	.139	0.0155	.426	-0.0181	.410
NEWCEO	+	0.0728	.225	0.0645	**.084**	-0.0842	.124
NEWISSUE	+	0.1436	**.009**	0.0168	.338	0.0413	.289
NEGROI	-	0.0019	.139	-0.0997	.175	0.0286	.440
LEVERAGE	-	0.0006	.463	0.0176	.198	-0.0081	.354
NAS_SPEC	+	0.1172	.118	0.0411	.193	0.2118	**.001**
US_LIST	-	0.0154	.436	0.0654	.134	0.1977	.062
US_SUB	-	0.1127	**.034**	0.0013	.487	0.0059	.469
YEAR1 #	?	-0.0784	.637	-0.1290	.131	-0.0039	.983
Adj R^2		.223		.200		.345	
F statistic		1.954		2.655		2.737	
(significance)		.011		.000		.000	

* Firms are ranked on AIP/GO, the smallest third being High GO, middle third being Moderate, and the largest third being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Table 32 Regression results: The Ratio of Auditor provided Non-Audit Services to Total Fee Regressed on Board and Audit Committee Quality and Independence and Control Variables for each of the four years 1999-2002 Pooled Sample ranked on AIP/GO and broken down into 3 sub-samples using quartiles.

Panel D: Regression results for 2002

	Pred. Sign.	High GO* Estimate	p#	Moderate* Estimate	p#	High AIP* Estimate	p#
(Constant) #		0.031	.774	-0.060	.598	0.059	.569
Board of Directors Variables							
B_SIZE	-,+,-	0.018	**.007**	0.013	**.031**	0.006	.162
B_DSHIP	+,-,+	-0.009	.376	-0.039	**.072**	-0.048	**.028**
B_MEET	+,-,+	0.006	**.013**	0.010	**.000**	0.006	**.006**
B_FINLIT	+,-,+	0.095	**.085**	-0.102	**.037**	-0.149	**.006**
B_OUTSIDE	+,-,+	0.074	.136	0.045	.249	-0.149	**.009**
B_CHAIR	+,-,+	0.006	.413	0.023	.173	0.030	.126
Audit Committee Variables							
A_SIZE	+,-,+	0.008	.211	-0.026	**.002**	-0.003	.387
A_MSHIP	+,-,+	0.001	.482	-0.002	.458	0.009	.340
A_MEET	+,-,+	-0.006	.239	-0.014	**.006**	0.000	.498
A_FINLIT	+,-,+	-0.101	**.016**	0.015	.355	0.071	**.051**
A_OUTSIDE	+,-,+	0.048	.156	0.013	.378	-0.005	.452
A_CHAIR	+,-,+	-0.072	**.044**	0.011	.363	0.056	**.057**
Control Variables							
BLOCK_20	-	0.001	**.002**	-0.001	**.013**	0.000	.222
BIG5	+	0.069	**.015**	0.096	**.001**	0.133	**.000**
AUD_SPEC #	?	-0.015	.634	-0.025	.340	0.022	.397
ALOCKS	+	-0.006	.315	0.009	.175	0.013	**.058**
MINING	-	-0.081	**.005**	-0.014	.308	-0.042	**.048**
FINANCIAL	-	0.050	.112	0.065	**.034**	0.028	.182
UTILITIES	-	-0.018	.327	0.107	**.011**	0.143	**.005**
ASSETS	+	0.001	.447	0.026	**.011**	0.015	**.047**
ALLSUBS	+	0.010	.185	0.007	.251	-0.002	.431
RESTRUCT	+	0.092	**.007**	0.019	.264	0.047	**.043**
NEWCEO	+	0.047	.119	0.097	**.002**	0.041	.105
NEWISSUE	+	0.044	**.030**	0.043	**.029**	0.040	**.049**
NEGROI	-	-0.001	.188	-0.147	**.076**	0.044	.282
LEVERAGE	-	-0.001	.324	0.000	.478	0.000	.301
NAS_SPEC	+	0.067	**.016**	0.040	**.061**	0.074	**.002**
US_LIST	-	0.055	**.076**	-0.019	.299	0.032	.244
US_SUB	-	0.031	.105	0.027	.152	0.002	.470
YEAR1 #	?	-0.087	**.039**	0.004	.924	-0.082	**.030**
Adj R^2		.161		.197		.253	
F statistic		4.400		5.374		.6980	
(significance)		.000		.000		.000	

* Firms are ranked on AIP/GO, the smallest third being High GO, middle third being Moderate, and the largest third being High AIP

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which are 2-tailed

Where:

APNAS/TFEE	=	non-audit fees / total fees
B_SIZE	=	number of board members
B_DSHIPS	=	average number of directorships by outside directors on the board
B_MEET	=	sum of the total number of board meetings attended by each director divided by the number of directors
B_FINLIT	=	percentage of outside directors with a financial background on the board
B_OUTSIDE	=	percentage of outside directors on the board
B_CHAIR	=	1 if chairman is an outside director; 0 otherwise
A_SIZE	=	number of audit committee members
A_MSHIP	=	average number of audit committee memberships by outside audit committee members on the board
A_MEET	=	sum of the total number of audit committee meetings attended by each director divided by the number of directors
A_FINLIT	=	percentage of outside audit committee members with a financial background on the board
A_OUTSIDE	=	percentage of outside directors in the audit committee
A_CHAIR	=	1 if chairman of audit committee is an outside director; 0 otherwise
BLOCK	=	% owned by blockholders
BIG5	=	1 if auditor is Big 5, 0 otherwise
AUD _SPEC	=	1 if auditor has > 15% of audit services
ALOCKS	=	the number of other firms that share the same auditor and directors
MINING	=	1 if Resource; 0 otherwise
FINANCIAL	=	1 if Banking and Finance; 0 otherwise
UTILITIES	=	1 if Infrastructure and Utilities; 0 otherwise
ASSETS	=	natural log of total assets
ALLSUBS	=	natural log of the total number of subsidiaries
RESTRUCT	=	1 if firm undergone restructuring; 0 otherwise
NEWCEO	=	1 if there is a change in CEO; 0 otherwise
NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise
AIP/GO	=	Accounting book value of total assets divided by the sum of the market value of common equity and the book value of total debt and preferred stock.

As expected, the results are generally weaker compared to the pooled 4-year regression. While the pooled regression showed the AIP sub-sample to be have the strongest results, most of the yearly regressions favour the moderate sub-sample, with

2001 being the notable exception whose AIP sub-sample produced the strongest results. However it is possible that the smaller sample sizes of the high GO and high AIP sub-samples might be a cause.

A2.8 Additional analysis for the replication of Abbott et al. (2003): yearly regressions

In chapter 5.9, the regression model used in Abbott et al. (2003) was replicated. In particular, the ACE variable used in that paper was used instead of the board and audit committee variables used in this thesis. It was found that when used by itself, that it was positively significant in the 4-year pooled sample.

The regression is estimated for each of the four years in the sample separately and the results are reported in Table 33 below.

Table 33 Regression results: The Ratio of Auditor provided Non-Audit Services to Audit Fee Regressed on Board, Audit Committee, and Control Variables for each of the four years 1999-2002

	Predicted	1999		2000		2001		2002	
	Sign	Estimate	p#	Estimate	p#	Estimate	p#	Estimate	p#
(Constant)#		-0.6510	.224	-1.1706	.191	-1.1749	.165	-1.4384	.190
Test Variable									
ACE	-	0.2075	.095	2.555	**.006**	0.0854	.364	-0.3595	.118
Control Variables									
BLOCK	-	-0.0014	.322	0.0069	.051	0.0046	.137	0.0010	.431
BIG5	+	0.2118	.140	0.4407	**.072**	0.3927	**.098**	0.4603	.124
AUD_SPEC#	?	0.6465	**.001**	-0.5280	**.038**	-0.4793	.125	-0.5227	.147
ALOCKS	+	0.0337	.232	0.0694	.186	-0.0174	.422	-0.1327	.107
MINING	-	-0.1418	.218	-0.7560	**.005**	-0.0121	.483	0.1043	.371
FINANCIAL	-	-0.0625	.385	0.3941	.101	0.0368	.454	0.3569	.170
UTILITIES	-	0.8767	**.002**	1.0926	**.004**	0.5564	.085	3.3983	**.000**
ASSETS	+	0.1025	**.024**	0.1141	**.087**	0.1433	**.045**	0.1861	**.036**
ALLSUBS	+	-0.0104	.439	-0.0223	.410	-0.0830	.206	-0.1130	.173
RESTRUCT	+	0.1714	.185	0.5270	**.015**	0.7438	**.046**	2.2310	**.000**
NEWCEO	+	-0.0828	.388	0.5891	**.021**	0.3546	.118	1.7844	**.005**
NEWISSUE	+	0.3333	**.023**	0.3171	**.082**	0.1848	.219	-0.2360	.190
NEGROI	-	-0.0028	.214	-0.3584	.172	0.0049	.353	0.0322	.482
LEVERAGE	-	0.0002	.446	0.0051	.427	-0.0204	.312	-0.0600	.248
NAS_SPEC	+	-0.1131	.281	0.8587	**.000**	0.8771	**.002**	1.0507	**.002**
US_LIST	-	0.0372	.445	-0.1786	.317	0.4728	.107	0.2308	.310
US_SUB	-	-0.1712	.169	-0.1379	.286	0.2745	.132	0.1804	.278
YEAR1#	?	-0.3149	.397	0.2255	.727	-0.4395	.452	-0.7105	**.036**
Adj R^2		.098		.137		.066		.119	
F statistic		3.270		4.238		2.477		3.931	
(significance)		.000		.000		.000		.000	

p-values are 1 tailed except for the constant, AUD_SPEC and YEAR1 which is 2-tailed

Where:

APNAS/AFEE = non-audit fees / audit fees

ACE = 1 if the audit committee is comprised entirely of independent directors and meets at least four times during the year and 0 otherwise.

BLOCK = % owned by blockholders

BIG5 = 1 if auditor is Big 5, 0 otherwise

AUD _SPEC = 1 if auditor has > 15% of audit services

ALOCKS = the number of other firms that share the same auditor and directors

MINING = 1 if Resource; 0 otherwise

FINANCIAL = 1 if Banking and Finance; 0 otherwise

UTILITIES = 1 if Infrastructure and Utilities; 0 otherwise

ASSETS = natural log of total assets

ALLSUBS = natural log of the total number of subsidiaries

RESTRUCT = 1 if firm undergone restructuring; 0 otherwise

NEWCEO = 1 if there is a change in CEO; 0 otherwise

NEWISSUE	=	1 if the firm issued new stocks or equity for cash and/or has listed in another exchange during the current year; = 0 otherwise
NEGROI	=	two-year average ROI if negative, =0 otherwise
LEVERAGE	=	long term debt to shareholder's equity
NAS_SPEC	=	1 if auditor has > 15% of APNAS
US_LIST	=	1 if listed on an American stocks exchange, =0 otherwise
US_SUB	=	1 if it has an American subsidiary, =0 otherwise
YEAR1	=	1 if first year of audit engagement; =0 otherwise

The results show 2000 to be the only year in which ACE was significant (p = .011, two-tailed) and seems to confirm the fact that the year 2000 produces the strongest relationship between the test variables and relative APNAS spending. The 2000 regression also produced the highest adjusted R^2 among the four years as well, which is consistent with the findings of the full model used earlier in the study.